FEB 18 1999
JWH (2)

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 140128

2. To: (Receiving Organization) GJ Gauck, SST Engineering	3. From: (Originating Organization) AM Ermi, COGEMA Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: SST Engineering	6. Design Authority/Design Agent/Cog. Engr.: GJ Gauck	7. Purchase Order No.: N/A
8. Originator Remarks: Operational Test Report (OTR) for the DACS Upgrade System. This OTR reports the results of the first OTP (OTP-440-002) that was performed during Dual-Mode operation in the DACS Trailer.		9. Equip./Component No.: N/A
11. Receiver Remarks: A USQ was generated to upgrade the DACS software to be 12K compliant. The USQ number is TF-98-1059.		10. System/Bldg./Facility: N/A
11A. Design Baseline Document? ☒ Yes ☐ No 2/1/99		13. Permit/Permit Application No.: N/A
		14. Required Response Date: February 24, 1999

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-2992		0	DACS Interface Upgrade OTR	SQ	1	1	

16. KEY		
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D, O, R, N/A (See WHC-M-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	/	Design Authority	<i>RE Larson</i>	2/17/99	T4-07						
1	/	Design Agent	AM Ermi	2/17/99	L6-37						
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1	/	Safety	LS Krogsrud	2/17/99	T4-07						
		Env.									

18. AM Ermi 2/17/99 AM Ermi Signature of EDT Originator Date	19. RE Larson 2/17/99 RE Larson Authorized Representative for Receiving Organization Date	20. RE Larson 2/17/99 RE Larson Design Authority/Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl No. _____ ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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241-SY-101 Data Acquisition and Control System (DACS) Operator Interface Upgrade Operational Test Report

A. M. Ermi

COGEMA Engineering Corporation, P.O. Box 840
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 140128

UC: 2030

Org Code: S4100

Charge Code: 102525 BC-20.

B&R Code: EW3120072

Total Pages: 99

Key Words: DACS, DATA ACQUISITION AND CONTROL SYSTEM, 241SY101, MIXER PUMP, OTR, UPGRADE, Y2K

Abstract: The readiness of the upgraded Data Acquisition and Control System (DACS) to provide proper control and monitoring of the mixer pump and instrumentation in tank 241-SY-101 was evaluated by the performance of OTP-440-002. Results of the OTP are reported here.

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2/18/99
Release/Approval Date

Release Stamp

Approved For Public Release

**241-SY-101 DATA ACQUISITION
AND CONTROL SYSTEM
(DACS) OPERATOR
INTERFACE UPGRADE
OPERATIONAL TEST REPORT**

**HNF – 2992
Revision 0**

Lockheed-Martin Hanford Company, Richland, WA

February 1999

DACS OPERATOR INTERFACE UPGRADE OPERATIONAL TEST REPORT

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DACS OPERATOR INTERFACE UPGRADE OPERATIONAL TEST REPORT

Summary of OTP-440-002, "241-SY-101 Data Acquisition and Control System (DACS) Operator Interface Upgrade Operational Test Procedure", Revision 0.

Testing commenced on 2/11/1999 and was completed on 2/12/1999.

The completed procedure consists of 8 test sections, Sections 5.1 through 5.8:

- Section 5.1 performed checks of the system security functions, including 4 levels of passwords.
- Section 5.2 tested the system display screen functions, including navigation between screens and verification of controls built-in to individual screens.
- Sections 5.3 and 5.4 performed verifications of individual trend displays available from the [TRENDS] screen.
- Section 5.5 conducted end-to-end checks of instrumentation to verify proper screen display values for test input signals provided from the field.
- Section 5.6 performed a comparison of values displayed by the Genesis stations in the DACS trailer to values displayed by the FIX32 stations in the DACS trailer, by printing copies of each major screen from both systems.
- Section 5.7 performed tests of various pump runs, compared displayed pump parameters with parameters displayed on the Variable Speed Drive (VSD) units, and performed actual mixer pump rotation in the SY-101 tank.
- Section 5.8 performed tests to verify that the system and software are "Year 2000" compliant.

Six Test Exceptions were written during testing to document typographical errors, steps out-of-sequence or missing, and incorrectly specified test signals. All six Test Exceptions were resolved by making pen-and-ink changes to the procedure. No open Test Exceptions remain. The substitution of steps, the additions to steps, and the new test signals which were substituted for the original values, were within the scope of USQ TF-98-1059.

The OTP was successfully and satisfactorily completed.

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DACS OPERATOR INTERFACE UPGRADE OPERATIONAL TEST REPORT

The remainder of this Operational Test Report (OTR) consists of:

- All of the pages of the OTP, which describe the testing that was conducted and attest to the results that were obtained.
- The signed printouts of the screens produced in Section 5.6.

The page numbers for the OTR appear in the lower left-hand corner of the page and the page numbers of the original OTP were left for reference.

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TANK FARM PLANT OPERATIONAL TEST PROCEDURE

DACS

241-SY-101 DATA ACQUISITION AND CONTROL SYSTEM (DACS) OPERATOR INTERFACE UPGRADE OPERATIONAL TEST PROCEDURE

Last Full Revision: A-0
Release Date: 1/29/99
USQ Screening Number: TF-98-1059
Approval Designator: SQ

Current Modification: A-0
USQ Screening Number: TF-98-1059
Approval Designator: SQ
PCA Incorporated: NA

POSITION/ORG	DELEGATE	DATE
LNCO	<u>L.S. Dauenhauer</u>	<u>1/26/99</u>
QE/QA	<u>R.R. True</u>	<u>1/28/99</u>
Safety/TWRS	<u>L.S. Krogsrud</u>	<u>1/28/99</u>
SOM/SST	<u>W. Parnell</u>	<u>1/29/99</u>
TWRS Env Eng	<u>J.D. Guberski</u>	<u>1/29/99</u>
Eng	<u>G. Gauck</u>	<u>1/26/99</u>
Health Physics	<u>B. Brown</u>	<u>1/29/99</u>
Acceptance Review	<u>P.F. Johnston</u>	<u>1/29/99</u>
Approval Authority	<u>R.P. Tucker</u>	<u>1/29/99</u>
Approval Authority	<u>D.C. Larsen</u>	<u>1/29/99</u>

Justification:

Summary of Changes:

New Procedure

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1.0 PURPOSE AND SCOPE

1.1 PURPOSE

This procedure provides instructions for readiness of the first portion of the upgraded 241-SY-101 Data Acquisition and Control System (DACS) computer system to provide proper control and monitoring of the mitigation mixer pump and instrumentation installed in the 241-SY-101 underground storage tank, will be systematically evaluated by the performance of this procedure.

1.2 SCOPE

This procedure involves the Intellution Human-Machine Interface (HMI) software program verification:

- Adequate operator display and control screens.
- Proper alarm notification and display.
- Proper abort notification and display.
- Proper operator control interface capability.
- Alarm and event logging.
- Real-time and historical trending.
- Proper interface with the Programmable Logic Controllers (PLCs) for system control.
- Proper system security, including passwords and levels of authorization for system use.

Hardware and software components will also be tested for Year 2000 compliance. Proper operation of the system for transition from/to the following dates will be verified:

- 12/31/1999 to 01/01/2000 (change of millennium)
- 02/28/2000 to 02/29/2000 (year 2000 is a leap year)

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2.0 INFORMATION

2.1 TERMS AND DEFINITIONS

- 2.1.1 In this procedure the verb select means that the mouse pointer should be positioned over the button, icon, or other item on the computer display screen and click the left mouse button.
- 2.1.2 OPS Is the name and password for operator level access to the DACS for testing purposes.
- 2.1.3 SUPER Is the name and password for supervisor level access to the DACS for testing purposes.
- 2.1.4 A Is the name, and there is no password for administrator/developer level access to the DACS for testing purposes.

2.2 RESPONSIBILITIES

- 2.2.1 DACS Cognizant Engineer: The individual assigned direct responsibility for the performance, preparation, and adequacy of the test.
- 2.2.2 Test Director: The person assigned shift responsibility for performance of the test.
- 2.2.3 Only properly trained and qualified Operations personnel designated by the West Area Shift Manager (WASM) and the DACS Cognizant Engineer are allowed to direct testing per this procedure, and perform equipment operating and control functions.
- 2.2.4 One cognizant engineer acting as a Test Director is required to be present during testing.

2.3 REFERENCES

- 2.3.1 HNF-1516, Thermocouple Module Halt Failure Acceptance Test Procedure For Tank 241-SY-101 DACS-1, Revision 0
- 2.3.2 HNF-2989, 241-SY-101 Data Acquisition and Control System (DACs) Operator Interface Upgrade Acceptance Test Procedure, Revision 0
- 2.3.3 WHC-SD-WM-ATP-046, 101-SY Mitigation Testing Acceptance Test Procedure, Revision 0
- 2.3.4 WHC-SD-WM-ATP-058, 101-SY Post Pump-Installation Acceptance Test Procedure, Revision 1
- 2.3.5 WHC-SD-WM-ATP-061, MIT Acceptance Test Procedure, Revision 0
- 2.3.6 WHC-SD-WM-ATP-062, Phase B Mitigation Testing Software Acceptance Test Procedure, Revision 0
- 2.3.7 WHC-SD-WM-ATP-069, Acceptance Test Procedure For Tank Bottom Thermocouples On Tank 241-SY-101, Revision 2
- 2.3.8 WHC-SD-WM-ATP-070, 101-SY Post Phase B Acceptance Test Procedure, Revision 0-A
- 2.3.9 WHC-SD-WM-ATP-082, DACS Upgrade Acceptance Test Procedure, Revision 0
- 2.3.10 WHC-SD-WM-ATP-098, GMS/DACS Interface Acceptance Test Procedure, Revision 0
- 2.3.11 WHC-SD-WM-ATP-107, MIT Upgrade Acceptance Test Procedure, Revision 1
- 2.3.12 WHC-SD-WM-ATP-128, Operator Coil Monitoring Acceptance Test Procedure, Revision 0

2.4 GENERAL INFORMATION

- 2.4.1 Testing will be performed in the DACS trailer, located in the 200 West Area of the Hanford site, using actual instrumentation input signals and initiating actual control of the mitigation mixer pump Variable Speed Drives (VSDs). This procedure will be performed after successful performance of HNF-2989, 241-SY-101 Data Acquisition and Control System (DACS) Operator Interface Upgrade Acceptance Test Procedure in the DACS Development Laboratory.
- 2.4.2 During this test, the DACS trailer will be configured for Dual Mode operation. This operational mode will be accomplished using an A/B switch located above Station 5, which will have Genesis and FIX32 positions. The selected position will determine which set of DACS trailer computers will receive input signals from the SY-101 Tank Farm, through the PLCs in the DACS trailer.
- 2.4.3 The computers running Genesis-based software will remain installed in the DACS trailer for required mixer pump operation and will also be used to verify that the field instrumentation values displayed on the new computer system are correct. Upon successful completion of this procedure, the computers running the Genesis-based program will be removed from the DACS trailer and the remainder of the new computers will be installed and configured for operation.
- 2.4.4 The portion of the upgraded DACS computer system to be tested per this procedure, consists of three CyberResearch 400 Mhz Personal Computers (PCs), (DACS Computer Stations 5, 6, and 8), networked together via a Modbus Plus network and connected to a Modicon Model 984 PLC. The three PCs are programmed with Intellution HMI software, and provide full operator interface for the control and monitoring of the 241-SY-101 instrumentation and mitigation mixer pump.

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2.4 GENERAL INFORMATION (Cont.)

2.4.5 The portions of the system to be tested include:

- Operator display screens and screen controls.
- System alarming and alarm display functions.
- System data, event, and alarm logging.
- System security implementation and password control.
- System display of changing instrumentation input signals.
- Proper control of VSD for mixer pump rotation drive and pump motors.
- Proper implementation of pre-programmed mitigation mixer pump control sequences.
- Proper enabling and disabling of abort coils for designated instruments.
- Proper control of the Auto/Manual status of designated system tags.
- Pre-defined real-time and historical trends, as well as the ability to modify or create new trends.

2.5 RECORDS

At the completion of all testing, approval of all data collected and system performance shall be documented on Attachment 3, "Final Procedure Acceptance Sheet".

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3.0 PRECAUTIONS AND LIMITATIONS

3.1 PERSONNEL SAFETY

Jumpers and Lifted Leads

In this procedure, there may be occasions when leads are lifted and landed at various terminals. Some of these leads could be energized, and some cabinet internals could also be energized to voltages at levels up to 120 Vac. Hand and eye protection shall be worn, and insulated tools shall be used, when working on or near energized circuits (120 Vac), if required. The instrument leads and cabinet internals must be energized to verify proper functioning of system equipment and alarms.

3.2 RADIATION AND CONTAMINATION CONTROL

- 3.2.1 When this procedure is performed in a radiological area (except for buffer and underground areas) and the area is not a High Contamination, High Radiation, or Airborne Radioactivity Area, then this is low risk radiological work, and a general Radiological Work Permit shall be assigned by Radiological Control Engineering and Technical Support.
- 3.2.2 When this procedure is performed in a High Contamination, High Radiation, Airborne Radioactivity Area or if a breach is to made of a system or component containing radioactive material then an approved Job Control System package and a job specific Radiological Work Permit is required.

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3.3 LIMITS

- 3.3.1 If, during testing, any indicated parameter or control function is not correct or appears to be malfunctioning, then the engineer conducting this test shall make a determination as to the feasibility of continuing testing. Since actual mitigation mixer pump operation will not occur during this test, there should be no safety impact to continuing the test and completing corrective actions later. A record of all noted deficiencies will be kept on Attachment 1, "Exception List".
- 3.3.2 At the completion of all testing, approval of all data collected and system performance shall be documented on Attachment 3, "Final Procedure Acceptance Sheet".
- 3.3.3 Any required changes to this procedure shall be approved by the DACS Cognizant Engineer, or a designated representative, and may be made as pen-and-ink changes in all official and working copies of the procedure. An entry shall be made in the official Test Log fully describing the change or changes and the reason for the change(s). A PCA documenting the change or changes, shall be initiated by the DACS Cognizant Engineer and approved per administrative requirements, however testing is not required to be stopped.

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4.0 PREREQUISITES

4.1 CONDITIONS AND ACTIONS

4.1.1 Unexpected Alarms

- If unexpected SY Tank Farm equipment alarms or abnormal indications are received during testing, testing evolutions shall be immediately suspended and actions, as prescribed in approved SY Tank Farm Alarm Response and Emergency Procedures, shall be taken by responsible facility personnel to place the equipment/facility in a safe, stable condition. When the reason for the unexpected condition is understood and resolved, then testing activities may be resumed after permission to do so is received from the West Area Shift Manager (WASM).

4.1.2 Prior to initiation of testing, and at the start of each shift during testing, test personnel and the WASM shall be briefed on the scope of testing to be conducted during the shift. The briefing shall include any equipment to be operated or controlled during the shift.

4.1.3 Prior to initiation of testing, the following items shall be verified:

4.1.4 The upgraded DACS computers are installed and ready for testing

\ 2-11-99
Test Director Date

4.1.5 The latest version of all software and programming to be tested has been loaded on to the DACS computers.

\ 2-11-99
Test Director Date

4.1.6 The mixer pump has been rotated to approximately 28 ° (26 to 30 °) for testing.

\ 2-11-99
Test Director Date

4.1 CONDITIONS AND ACTIONS (Cont.)

- 4.1.7 Prior to initiation of testing, the following equipment shall be available for use as required to complete work:
- 4.1.7.1 Insulated hand tools normally required for accessing equipment cabinets and terminal boards.
 - 4.1.7.2 Any personnel safety equipment required for performance of work on or near energized equipment (120 Vac).
 - 4.1.7.3 Stopwatch, commercial accuracy (no calibration required)
- 4.1.8 Attachment 2, "Measurement and Test Equipment (M&TE) Record Sheet", is included for recording data associated with M & TE used during the performance of this procedure.
- 4.1.9 All M & TE used for testing shall be in current calibration and shall have documentation certifying that the calibration is traceable to a national standard.

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5.0 PROCEDURE

NOTE - Sections and steps in this procedure should be performed in the order presented to maintain the continuity of the testing sequence. The order of the performance of sections and/or steps may be varied however, at the discretion of the Test Director.

5.1 SYSTEM SECURITY CHECKS

- ✕ 5.1.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.

 - 5.1.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.
 - 5.1.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.
- ✕ 5.1.2 ENSURE that no mixer pump operations are scheduled for at least 24 hours.
- ✕ 5.1.3 ENSURE that the upgraded computers are properly configured for operation and that the GEN NODE DRIVE A/B Switch is in the FIX32 position.
- ✕ 5.1.4 ENSURE that local power supply disconnect switches SY01A-WST-DS-001 and SY01A-WST-DS-002 for the mixer pump motor and directional drive motor are administratively locked in OFF.
- ✕ 5.1.5 START UP the Intellution FIX32 VIEW program on the upgraded Station 5, 6, and 8 DACS computers AND VERIFY that the WELCOME screen is displayed at all stations.
- ✕ 5.1.6 At all stations, LOGIN as OPS.
- ✕ 5.1.7 VERIFY that OPS OPERATIONS is displayed by LOGIN: on the WELCOME screen at all stations.
- ✕ 5.1.8 At all stations LOGIN as SUPER.
- ✕ 5.1.9 VERIFY that SUPER SUPERVISOR is displayed by LOGIN: on the WELCOME screen at all stations.
- ✕ 5.1.10 At all stations, LOGIN as A.
- ✕ 5.1.11 VERIFY that A ADMINISTRATOR is displayed by LOGIN: on the WELCOME screen at all stations.

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5.1 SYSTEM SECURITY CHECKS (Cont.)

5.1.12 PERFORM the following:

- ✓ 5.1.12.1 LOGIN as OPS at Station 5.
- ✓ 5.1.12.2 LOGIN as SUPER at Station 6.
- ✓ 5.1.12.3 LOGOUT at Station 8, AND VERIFY that "PUBLIC" is listed as the "Current User:".

NOTE - The alarm status of some tags shown on the "TAGSTAT" screen cannot be changed. Tags for which the alarm status cannot be changed should not be chosen in Step 5.1.13.

✗ 5.1.13 At all stations, one station at a time, ACCESS the "TAGSTAT" screen AND ATTEMPT to disable the alarm for any tag that has a changeable alarm status.

✗ 5.1.14 VERIFY the following:

✗ 5.1.14.1 VERIFY NO screen changes occur at Station 8.

✗ 5.1.14.2 VERIFY at Stations 5 and 6, the alarm status shows that the alarm for the selected tag is in a disabled condition.

✗ 5.1.15 At all stations, one station at a time, ATTEMPT to place any tag in Manual.

✗ 5.1.16 VERIFY the following:

✗ 5.1.16.1 VERIFY NO screen changes occur at Stations 5 and 8.

✗ 5.1.16.2 VERIFY at Station 6, the tag status shows that the selected tag is now in Manual.

✗ 5.1.16.3 RETURN the Alarm status of the selected tags to Auto *Enable* at Stations 5 and 6.

✗ 5.1.16.4 RETURN the Auto/Manual status of the selected tags to Auto at station 6.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

Test Director Signature:

Date: 2/11/99

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5.2 DISPLAY SCREEN CHECKS

- 5.2.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.
 - 5.2.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.
 - 5.2.1.2 REPRODUCE Attachment 1 as needed, and attach the additional pages to this procedure, to record all discrepancies noted during testing.

NOTE - The following steps should be performed at Station 5.

- X 5.2.2 With the WELCOME screen displayed, VERIFY that the date is displayed in the upper left-hand corner of the screen and that the time (in military format) is displayed in the upper right-hand corner of the screen.
- X 5.2.3 VERIFY that the Version of the DACS software being tested is 4.00, and that the Version of the PLC software being tested is 3.06, as displayed below the date in the upper left-hand corner of the screen.
- X 5.2.4 From the WELCOME screen, SELECT any five other screens AND VERIFY that the date, time (within one minute), DACS software version number, and PLC software version number are the same as displayed on the WELCOME screen.

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5.2 DISPLAY SCREEN CHECKS (Cont.)

✓ 5.2.5 From the WELCOME screen, PERFORM the following for each of the listed buttons:

• CSMAN ✓	• HVTALARM ✗	• PUMPALRM ✗
• STRNALM ✗	• TEMPALM ✗	• MANABRT ✓
• NETSTAT ✗	• MSMAN ✗	• MITI7B ✗
• MIT17C ✗	• PUMP ✗	• GASSUM ✗
• SUMMARY ✗	• TEMPRFL ✗	• ROLLOVER ✗
• ASMAIN ✗	• PUMPOPS ✗	• TRENDS ✗
• DACS ✗	• IOSTATUS ✗	• ABRTENAB ✗
• ABRTCHKY	• MININ ✗	• TAGSTAT ✗
• PUMPVIEW ✗		

✗ 5.2.5.1 SELECT the button.

✗ 5.2.5.2 VERIFY that the screen that is now displayed is the screen that should be associated with the button that was selected.

✗ 5.2.5.3 SELECT the MAP button on the displayed screen.

✗ 5.2.5.4 VERIFY that the MAP screen is displayed.

✗ 5.2.5.5 SELECT the WELCOME button on the MAP screen AND VERIFY that the WELCOME screen is displayed.

✓ 5.2.6 SELECT the LOGIN/OUT button, SELECT the LOGIN button on the Login/Logout Confirmation screen, AND LOGIN as SUPER.

< 5.2.7 PRESS the <F2> key AND VERIFY that a Tag Status pop-up box is displayed.

✗ 5.2.8 SELECT the ? in the Tag Status box.

✗ 5.2.9 VERIFY that a Tag Select box is displayed.

✗ 5.2.10 In the Tag Select box, USE the scroll bar to advance through the list of the tags in the database, SELECT a tag, AND THEN SELECT the OK button.

✗ 5.2.11 VERIFY that the Tag Select box is no longer displayed and that the tag that was selected is now displayed in the Tag Status box in the Tagname field.

✗ 5.2.12 SELECT OK AND VERIFY that a tag details pop-up screen is displayed providing information about the selected tag.

5.2 DISPLAY SCREEN CHECKS (Cont.)

- X 5.2.13 SELECT the CLOSE button on the tag details pop-up screen AND VERIFY that the tag details screen and the Tag Status box are no longer visible.
- X 5.2.14 PRESS the <F4> key AND VERIFY that the ALARMSUM screen is displayed.
- X 5.2.15 SELECT the HELP button AND VERIFY that the ALARMSUM Screen Help screen is displayed.
- X 5.2.16 SELECT the CLOSE button AND VERIFY that the ALARMSUM Screen Help screen is no longer displayed.
- X 5.2.17 SELECT the EVENT SUM button AND VERIFY that a RED NOTE box is displayed with the message CLOSE ALARM/EVENT BOX WHEN NOT USING and a Select an Alarm/Event Summary File message box is displayed.
- X 5.2.18 VERIFY that the list in the message box contains files for the last 30 days (if 30-days of data files are available).
- X 5.2.19 SELECT a file, SELECT the Enter button, AND VERIFY that the selected file is displayed in an Alarm/Event Summary File message box.
- X 5.2.20 SELECT the Done button AND VERIFY that the Alarm/Event Summary File message box and the NOTE box are no longer displayed.
- X 5.2.21 SELECT the PREV SCREEN button AND VERIFY that the WELCOME screen is displayed.
- X 5.2.22 SELECT the CSMAIN button AND VERIFY that the CSMAIN screen is displayed.
- X 5.2.23 PRESS the <F6> key, AND VERIFY that the WELCOME screen is displayed.
- X 5.2.24 PRESS the <F6> key AND VERIFY that the CSMAIN screen is displayed.
- X 5.2.25 PRESS the <F8> key AND VERIFY that the CSMAIN Screen Help screen is displayed.
- X 5.2.26 PRESS the <F8> key AND VERIFY that the CSMAIN Screen Help screen is no longer displayed.
- X 5.2.27 PRESS the <Ctrl-L> keys AND VERIFY that the Login/Logout Confirmation screen is displayed.

5.2 DISPLAY SCREEN CHECKS (Cont.)

- X 5.2.28 SELECT the CLOSE button on the Login/Logout Confirmation screen.
- X 5.2.29 SELECT the PRINT button AND VERIFY that a pop-up screen with the message Are You Sure That You Want To Print? is displayed.
- X 5.2.30 SELECT the YES button AND VERIFY that a print of the CSMAN screen is printed on the DACS printer and the pop-up screen is no longer displayed.
- X 5.2.31 ACCESS the WELCOME screen AND VERIFY that the P-RUN-VIS button is visible.
- X 5.2.32 SELECT the P-RUN-VIS button, AND VERIFY, that on the PUMPRUN Button Visible Checklist screen, a RED checkmark is not present in the large Station 5 box near the center of the screen and that a RED checkmark is present in the box preceding Station 8, under the Currently Enabled Stations heading.
- X 5.2.33 At Station 8, VERIFY that a PUMPRUN button is visible on the following screens:
 - MAP X
 - PUMP X
 - WELCOME X
 - GASSUM X
- X 5.2.34 SELECT the large Station 5 box near the center of the screen.
- X 5.2.35 VERIFY that a RED checkmark becomes visible in the large Station 5 box near the center of the screen and also in the small box preceding Station 5 under the Currently Enabled Stations heading.
- NOTE - Only one station may have pump control at any given time. When one station is selected as the pump control station, the other stations are automatically configured for pump operation viewing only.
- X 5.2.36 VERIFY that the RED checkmark is no longer visible in the small box preceding Station 8.
- X 5.2.37 SELECT the CLOSE button AND VERIFY that the PUMPRUN button is now visible and the PUMPVIEW button is no longer visible, on the WELCOME screen.

5.2 DISPLAY SCREEN CHECKS (Cont.)

- X 5.2.38 SELECT the PUMPRUN button AND VERIFY that the PUMPRUN screen is displayed.
- X 5.2.39 SELECT the HELP button AND VERIFY that the PUMPRUN Screen Help screen is displayed.
- X 5.2.40 SELECT the CLOSE button AND VERIFY that the PUMPRUN Screen Help screen is no longer displayed.
- X 5.2.41 At Station 8, VERIFY that a PUMPRUN button is no longer visible and a PUMPVIEW button is visible on the following screens:
 - MAP X
 - WELCOME X
 - GASSUM X
 - PUMP X
- X 5.2.42 At Station 5, SELECT the PUMP button AND VERIFY that the PUMP screen is displayed.
- X 5.2.43 On the PUMP screen SELECT the PUMPRUN button AND VERIFY that the PUMPRUN screen is displayed.
- X 5.2.44 SELECT the GASSUM button AND VERIFY that the GASSUM screen is displayed.
- X 5.2.45 On the GASSUM screen SELECT the PUMPRUN button AND VERIFY that the PUMPRUN screen is displayed.
- X 5.2.46 At Station 5, SELECT the MAP button AND VERIFY that the MAP screen is displayed.
- X 5.2.47 SELECT any screen from the MAP screen AND THEN SELECT the ALARM SUMMARY button in the lower left-hand corner of the screen.
- X 5.2.48 VERIFY that the ALARM SUMMARY screen is displayed.
- 5.2.49 SELECT the MAP and then NETSTAT buttons.

5.2 DISPLAY SCREEN CHECKS (Cont.)

5.2.50 VERIFY the following is displayed for Stations 5, 6, and 8:

5.2.50.1 VERIFY STATUS is ONLINE (GREEN letters).

5.2.50.2 VERIFY DATE is the current date (GREEN letters).

5.2.50.3 VERIFY TIME the approximate time of the last system startup (GREEN letters).

5.2.50.4 VERIFY NAME is SUPER for Stations 5 and 6 , and PUBLIC for Station 8 (BLACK letters).

5.2.50.5 VERIFY GROUP is SUPERVISOR for Stations 5 and 6, and VIEW ONLY for Station 8 (BLACK letters).

5.2.50.6 VERIFY DATE is the current date (BLACK letters).

5.2.50.7 VERIFY TIME is the approximate time of the last user login (BLACK letters).

5.2.51 At Station 5, ACCESS the WELCOME screen.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

 Test Director Signature

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5.3 TREND SCREEN CHECKS

5.3.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.

5.3.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.

5.3.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.

X 5.3.2 LOG IN to Stations 5, 6, and 8 as OPS AND VERIFY the following is displayed on the NETSTAT screen at Station 6 for all stations:

X 5.3.2.1 VERIFY STATUS is ONLINE (GREEN letters).

X 5.3.2.2 VERIFY DATE is the current date (GREEN letters).

X 5.3.2.3 VERIFY TIME the time on-line status was achieved (GREEN letters).

X 5.3.2.4 VERIFY NAME is OPS (BLACK letters).

X 5.3.2.5 VERIFY GROUP is OPERATIONS (BLACK letters).

X 5.3.2.6 VERIFY DATE is the current date (BLACK letters).

X 5.3.2.7 VERIFY TIME is the time of login (BLACK letters).

NOTE - Trend checks should be performed utilizing all three stations (Stations 5, 6, and 8) simultaneously, to minimize required test performance time.

X 5.3.3 ACCESS the TRENDS screen.

X 5.3.4 SELECT any PEN GROUP AND VERIFY that a pop-up screen is displayed with a listing of tagnames included in the selected pen group.

5.3.5 USING Table A, VERIFY that the tagnames listed for the selected pen group are the same as listed in Table A.

5.3 TREND SCREEN CHECKS (Cont.)

- X 5.3.6 REPEAT Steps 5.3.4 and 5.3.5 for two additional pen groups, THEN GO TO Step 5.4.1.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

 _____ / 2-11-99.
 Lisa J. Gaudin Signature Date

TABLE A - DATA GROUPS

PEN GROUP	TAGS INCLUDED IN GROUP
Tank Flow, pressure, Hydrogen	FTE50001, FTE50002, FTE50003, PIR17B04, PIR17C01, GC2-H2, GC3-H2, NIR17B01
Tank Level, Strain	LIR01A, LIR01C, WIR12A04
Pump Motor Parameters	ZIMPE112, ZIMPE142, VR232020, VR232040, VR232050, TIR12A01, TIR12A02
Pump pressures, Strains	PDPBASE, PCR12A01, PITN0110, PITN0111, WIR12A01, WIR12A02, WIR12A03, WIR12A04
Strain Gauges	WIR12A01, WIR12A02, WIR12A03, WIR12A04, WIR17C01, WIR17C02, WIR1BA01, WIR1BA02
Hydrogen, Vent Header	NIR05A01, NITKSY06, NITJSY06, NIR17B01, TT10001, MT10001
Hydrogen, NH ₃ , N ₂ O	GC1-H2, GC2-H2, GC3-H2, FT-N2OC, FT-NH3C, PHO-NH3
MIT17B TCs 01-08	TIR17B01, TIR17B02, TIR17B03, TIR17B04, TIR17B05, TIR17B06, TIR17B07, TIR17B08
MIT17B TCs 09-15	TIR17B09, TIR17B10, TIR17B11, TIR17B12, TIR17B13, TIR17B14, TIR17B15
MIT17B TCs 16-22	TIR17B16, TIR17B17, TIR17B18, TIR17B19, TIR17B20, TIR17B21, TIR17B22
MIT17C TCs 01-08	TIR17C01, TIR17C02, TIR17C03, TIR17C04, TIR17C05, TIR17C06, TIR17C07, TIR17C08
MIT17C TCs 09-15	TIR17C09, TIR17C10, TIR17C11, TIR17C12, TIR17C13, TIR17C14, TIR17C15
MIT17C TCs 16-22	TIR17C16, TIR17C17, TIR17C18, TIR17C19, TIR17C20, TIR17C21, TIR17C22
TBS TCs 01-08	TBSTC01, TBSTC02, TBSTC03, TBSTC04, TBSTC05, TBSTC06, TBSTC07, TBSTC08
TBS TCs 09-18	TBSTC09, TBSTC11, TBSTC12, TBSTC13, TBSTC15, TBSTC16, TBSTC17, TBSTC18
TBS TCs 19-26	TBSTC19, TBSTC20, TBSTC21, TBSTC22, TBSTC23, TBSTC25, TBSTC26
Weather Station	WST1, WSH1, WSP1, WSWSPD, WSWDIR

TABLE B - HISTORICAL TREND SCREENS

PEN GROUP	1 hr	4 hr	12 hr	24 hr	72 hr	7 day	30 day
Tank Flow, pressure,	A						
Tank Level, Strain	A						
Pump Motor Parameters							
Pump Pressures,							
Strain Gauges							
Hydrogen, Vent Header							
Hydrogen, NH ₃ , N ₂ O	A						
MIT17B TCs 01-08							
MIT17B TCs 09-15							
MIT17B TCs 16-22							
MIT17C TCs 01-08							
MIT17C TCs 09-15							
MIT17C TCs 16-22							
TBS TCs 01-08							
TBS TCs 09-18							
TBS TCs 19-26							
Weather Station							

X.5.4 PERFORM TABLE A AND B TASKS

X 5.4.1 USING Tables A and B, PERFORM the following:

X 5.4.1.1 SELECT a PEN GROUP.

X 5.4.1.2 SELECT an available historical trend for the desired pen group AND VERIFY that a Historical Display screen is visible.

X 5.4.1.3 VERIFY that the tagnames listed for the trends are the same as the tagnames listed for the desired pen group in Table A.

X 5.4.1.4 VERIFY that the selected trend displays the required amount of data (1-hour's worth, 7-day's worth, etc.)

X 5.4.1.5 SELECT the File pull-down menu AND THEN SELECT Exit to close the Historical Display screen.

X 5.4.1.6 IF the trend checks for a particular pen group were satisfactory, THEN INITIAL only the associated blocks in Table B.

5.4.1.7 REPEAT Steps 5.4.1.1 through 5.4.1.6 until three pen groups and an available trend have been verified, THEN GO TO Step 5.4.2.

X 5.4.2 At Station 6, ACCESS the 4-hr trend for HYDROGEN, VENT HEADER.

X 5.4.3 SELECT the File pull-down menu on the trend screen.

X 5.4.4 SELECT SAVE AS AND VERIFY that a pop-up SAVE AS screen is displayed.

X 5.4.5 SELECT the Cancel button and verify that the pop-up screen is no longer displayed.

X 5.4.6 SELECT the File pull-down menu on the trend screen AND THEN SELECT SAVE AS.

X 5.4.7 SELECT the Help button AND VERIFY that no changes occur.

X 5.4.8 ENTER Test in the field following New Group Name: AND SELECT the OK button OR PRESS the <Enter> key.

X 5.4.9 VERIFY that the pop-up screen is no longer displayed and that the 1-hr trend for Tank Level, Strain screen is now displayed with the title Test.

5.4 PERFORM TABLE A AND B TASKS (Cont.)

- ✕ 5.4.10 SELECT the File pull-down menu AND THEN SELECT Exit.
- ✕ 5.4.11 From the TRENDS screen SELECT any available trend button.
- ✕ 5.4.12 WHEN the selected trend is displayed, SELECT the File pull-down menu, AND THEN SELECT OPEN.
- ✕ 5.4.13 VERIFY that a SELECT Chart pop-up screen is displayed.
- ✕ 5.4.14 SELECT the Help button, VERIFY that no changes occur, AND THEN SELECT the Cancel button AND VERIFY that the pop-up screen is no longer displayed.
- ✕ 5.4.15 SELECT the File pull-down menu, AND THEN SELECT OPEN.
- ✕ 5.4.16 On the SELECT Chart screen, SCROLL through the selections until Test is displayed.
- ✕ 5.4.17 SELECT Test AND THEN SELECT the OK button or press the <Enter> key.
- ✕ 5.4.18 VERIFY that the Test trend screen is displayed.
- ✕ 5.4.19 VERIFY that Utilities on the main pull-down menu is grayed out.
- ✕ 5.4.20 SELECT the File pull-down menu AND THEN SELECT Exit.
- ✕ NOTE - The following steps should be performed at Station 6.
- ✕ 5.4.21 LOGIN as SUPER.
- ✕ 5.4.22 SELECT any available button on the TRENDS screen
- ✕ 5.4.23 VERIFY that Utilities on the main pull-down menu is grayed out.
- ✕ 5.4.24 SELECT File from the main pull-down menu AND THEN SELECT Exit.
- ✕ 5.4.25 LOGIN as A.
- ✕ 5.4.26 SELECT any available button on the TRENDS screen
- ✕ 5.4.27 VERIFY that Utilities on the main pull-down menu is not grayed out.
- ✕ 5.4.28 SELECT Utilities from the main pull-down menu.

5.4 PERFORM TABLE A AND B TASKS (Cont.)

- X 5.4.29 SELECT DEFINE CHART GROUPS AND VERIFY that a Define Chart Groups pop-up screen is displayed.
- X 5.4.30 SELECT the Help button AND VERIFY that a FIX HTD Help screen is displayed.
- X 5.4.31 CLOSE the Help screen.
- X 5.4.32 SCROLL through the chart groups until Test is displayed.
- X 5.4.33 SELECT Test AND THEN SELECT the Delete button.
- X 5.4.34 SELECT Yes on the Historical Display screen AND VERIFY that Test is no longer a valid Chart Group.
- X 5.4.35 SELECT the OK button AND VERIFY that the pop-up screen is no longer displayed.
- X 5.4.36 SELECT Utilities from the main pull-down menu.
- X 5.4.37 SELECT DEFINE PEN GROUPS AND VERIFY that a Define Pen Groups pop-up screen is displayed.
- X 5.4.38 SELECT the Help button AND VERIFY that a FIX HTD Help screen is displayed.
- X 5.4.39 CLOSE the Help screen.
- X 5.4.40 SCROLL through the pen groups until Test is displayed.
- X 5.4.41 SELECT Test AND THEN SELECT the Delete button.
- X 5.4.42 SELECT Yes on the Historical Display screen AND VERIFY that Test is no longer a valid Pen Group.
- X 5.4.43 SELECT the OK button AND VERIFY that the pop-up screen is no longer displayed.
- X 5.4.44 SELECT Utilities from the main pull-down menu.
- X 5.4.45 SELECT DEFINE TIME GROUPS AND VERIFY that a Define Time Groups pop-up screen is displayed.
- X 5.4.46 SELECT the Help button AND VERIFY that a FIX HTD Help screen is displayed.
- X 5.4.47 CLOSE the Help screen.

5.4 PERFORM TABLE A AND B TASKS (Cont.)

- X 5.4.48 SCROLL through the time groups until Test is displayed.
- Y 5.4.49 SELECT Test AND THEN SELECT the Delete button.
- X 5.4.50 SELECT Yes on the Historical Display screen AND VERIFY that Test is no longer a valid Time Group.
- X 5.4.51 SELECT the OK button AND VERIFY that the pop-up screen is no longer displayed.
- X 5.4.52 SELECT File from the pull-down menu AND THEN SELECT Exit AND VERIFY that all trend screens are closed at Stations 5, 6, and 8.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

 _____ / 2-11-99
 Test Director Signature Date

5.5 FIELD INSTRUMENTATION END-TO-END CHECKS

5.5.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.

5.5.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.

5.5.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.

5.5.2 IF necessary to allow testing of abort functions, THEN DISABLE the abort coils associated with any instruments that are sending erratic signals using the "ABRTENAB" screen.

5.5.3 IF necessary, RESET the abort coil.

5.5.4 RESET the E-Stop pushbuttons AND VERIFY that both pushbuttons are illuminated.

5.5.5 POSITION the E Stop alarm silence switch to NORMAL.

5.5.6 At Station 5, ACCESS the CSMAIN screen.

5.5.7 LOGIN as SUPER at Stations 5, 6, and 8.

NOTE - If the text and current value for a given tag name are displayed in RED, the tag is in an Alarm Condition.

- If the text and current value for a given tag name are displayed in flashing RED, the tag is in an Abort Condition.

- If the text and current value for a given tag name are displayed in YELLOW, an Instrument Problem Alarm Condition exists for the tag.

- If the abort coil is colored GREEN, the abort coil is OK (Reset).

- If the abort coil is colored RED, the abort coil is Not Cleared (Tripped).

- If either ZIMPE143 or ZIMPE144 are actuated (to cause an abort), ZIMPE112 will also go to an abort condition.

5.5.8 REFER to the "TAG NAME" Column of the Table C data sheet AND LOCATE the tag name of the first sensor to be tested.

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5.5 FIELD INSTRUMENTATION END-TO-END CHECKS (Cont.)

- 5.5.9 REFER to the "INPUT SIGNAL CONNECTION POINTS" Column of the data sheets, to locate the field terminals for the sensor to be tested.
- NOTE - If no other convenient terminal board is available for input of test signals, then the terminal board on the Input/Output (I/O) module may be removed and an extra test terminal board may be installed for use in applying the test input signal.
- 5.5.10 USE the most convenient terminal connection point for application of test input signals.
- 5.5.11 DISPLAY any appropriate screen(s) for the selected tag name, on Stations 5, 6, and 8.
- 5.5.12 IF the tag name is not displayed on any screens, THEN PRESS the <F2> key at Station 5 and display the tag details screen for the sensor being tested.
- 5.5.13 IF the sensor being tested provides an analog signal, THEN GO TO Step 5.5.22.
- 5.5.14 IF the sensor being tested provides a digital input, THEN:
- 5.5.14.1 APPLY the required input/test signal to cause a change of state ("ON" to "OFF" or "OFF" to "ON") as indicated at Station 5.
 - 5.5.14.2 RECORD that the sensor change of state occurred by entering "YES" in the "D:" block of the "HIGH END READING" column of the respective data sheet.
- 5.5.15 IF the sensor being tested does not provide an alarm and/or abort indication, THEN GO TO Step 5.5.23.

5.5 FIELD INSTRUMENTATION END-TO-END CHECKS (Cont.)

- 5.5.16 IF the sensor being tested provides an alarm and/or abort indication, THEN:
- 5.5.16.1 ENSURE that the abort coil associated with the sensor being tested is enabled, prior to testing the abort function.
 - 5.5.16.2 INITIAL the "AL:" block and/or the "AB:" block in the "ALARM/ABORT VALUES (DACS) column of the respective data sheet, if the alarm and/or abort signal was indicated when the displayed sensor value changed state.
 - 5.5.16.3 VERIFY that the alarm and/or abort is displayed in the "ALARM SUMMARY" portion of each displayed screen and on the ALARM SUMMARY screen.
 - 5.5.16.4 IF an abort was actuated, THEN VERIFY that the E Stop pushbuttons are no longer illuminated.
- 5.5.17 REMOVE the applied input/test signal.
- 5.5.18 IF an alarm and/or abort indication was actuated when the sensor was tested, THEN VERIFY that the alarm and/or abort condition has cleared.
- 5.5.19 IF necessary, RESET the abort coil at Station 5.
- 5.5.20 IF necessary, RESET the E-Stop pushbuttons.
- 5.5.21 IF testing was completed satisfactorily, THEN INITIAL the "TEST ENGINEER INITIALS" block for the sensor that was tested AND GO TO Step 5.5.32.

5.5 FIELD INSTRUMENTATION END-TO-END CHECKS (Cont.)

5.5.22 IF the sensor being tested provides an analog input, THEN:

5.5.22.1 REQUEST field personnel to apply an input/test signal as specified in the F: block in the LOW END READING Column on the respective data sheet.

5.5.22.2 RECORD the corresponding value displayed at Station 5, in the "D:" block in the "LOW END READING" Column, on the respective data sheet.

5.5.22.3 REQUEST field personnel to apply an input/test signal as specified in the F: block in the MID RANGE READING Column on the respective data sheet.

5.5.22.4 RECORD the corresponding value displayed at Station 5, in the "D:" block in the "MID RANGE READING" Column, on the respective data sheet.

5.5.22.5 REQUEST field personnel to apply an input/test signal as specified in the F: block in the HIGH END READING Column on the respective data sheet.

5.5.22.6 RECORD the corresponding value displayed at Station 5, in the "D:" block in the "HIGH END READING" Column, on the respective data sheet.

5.5.23 IF the sensor being tested does not provide alarm and/or abort signals, THEN REMOVE the applied input/test signal AND RETURN the sensor wiring to normal.

5.5.24 IF testing was completed satisfactorily, THEN INITIAL the "TEST ENGINEER INITIALS" block for the sensor that was tested AND GO TO Step 5.5.32.

5.5.25 IF the sensor being tested provides alarm and/or abort signals, THEN:

5.5.25.1 VARY the applied input/test signal as required to clear any active alarm and/or abort conditions.

5.5.25.2 ENSURE that the abort coil(s) for the sensor being tested is (are) enabled.

5.5.25.3 ENSURE that all alarms and/or aborts associated with the sensor being tested are clear, and that the abort coil and E-Stop pushbuttons are reset.

5.5.25.4 SLOWLY ADJUST the applied input/test signal to actuate the alarm(s) and/or abort(s), using the values in parenthesis in the "AL:" and "AB:" blocks on the data sheets as a guide.

5.5 FIELD INSTRUMENTATION END-TO-END CHECKS (Cont.)

NOTE - Some sensors provide HI and LO alarms and/or aborts. During testing of these sensors, ALL associated alarms and/or aborts shall be tested. Readings for LOW alarms and aborts are to be recorded in the "LO AL:" and "LO AB:" blocks respectively. Readings for HIGH alarms and aborts are to be recorded in the "HI AL:" and "HI AB:" blocks respectively.

- When an alarm and/or abort is actuated, the alarm and/or abort should be displayed on the "ALARM/EVENT SUMMARY" screen, and all other screens displaying the current value of the sensor should be displaying the proper alarm/abort condition.

5.5.26 WHEN an alarm is actuated, THEN:

- 5.5.26.1 ACKNOWLEDGE the alarm.
- 5.5.26.2 RECORD the corresponding value displayed at Station 5, in the "AL:", "LO AL:", or "HI AL:" block of the "ALARM/ABORT VALUES (DACS)" column on the respective data sheet.
- 5.5.26.3 VERIFY that the alarm is displayed on the "ALARM/EVENT SUMMARY" screen.
- 5.5.26.4 VERIFY that all of the screens are displaying the proper alarm/abort condition.

5.5.27 WHEN an abort is actuated, THEN:

- 5.5.27.1 SILENCE the E Stop alarm horn and acknowledge the alarm.
- 5.5.27.2 RECORD the corresponding value displayed at Station 5, in the "AB:", "LO AB:", or "HI AB:" block of the "ALARM/ABORT VALUES (DACS)" column on the respective data sheet.
- 5.5.27.3 VERIFY that the abort is displayed on the "ALARM/EVENT SUMMARY" screen.
- 5.5.27.4 VERIFY that the screen is displaying the proper alarm/abort condition.
- 5.5.27.5 VERIFY that the E-Stop pushbuttons are not illuminated.

5.5 FIELD INSTRUMENTATION END-TO-END CHECKS (Cont.)

- 5.5.28 REPEAT Steps 5.5.25.3 through 5.5.27.5 until all alarm and/or abort values have been determined as accurately as possible, THEN GO TO Step 5.5.29.
- 5.5.29 REMOVE the applied input/test signal AND RETURN the sensor wiring and or I/O module terminal boards to normal.
- 5.5.30 ENSURE that all alarms and/or aborts associated with the sensor being tested are clear.
- 5.5.31 IF testing was completed satisfactorily, THEN INITIAL the "TEST ENGINEER INITIALS" block for the sensor that was tested AND GO TO Step 5.5.32.
- 5.5.32 REPEAT Steps 5.5.8 through 5.5.31 as required, for all remaining sensors to be tested, as listed in Table C, THEN GO TO Section 5.6.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

Test Director Signature

1 2-12-99.

Date

TABLE C

TAG NAME	DESCRIPTION	SCALE/RANGE	INPUT SIGNAL RANGE	SIGNAL CONNECTION POINTS	LOW END READING	MID RANGE READING	ALARM/ABORT VALUES (OACS)	HIGH END READING	TEST ENGINEER INITIALS
MIPO0001	MOISTURE IN PUMP MOTOR OIL 1	ON/OFF	ON/OFF	Drop 2, Rack 2, Slot 3, Channel 1	F: N/A D: N/A	F: N/A D: N/A	AL: N/A AB: OK A	F: N/A D: OK A	A.
TT10001	VENT HEADER TEMPERATURE	30 TO 140 °F	4 to 30 Vdc 4 to 20 mA	Drop 4, Rack 1, Slot 4, Channel 1	F: 1.1 Vdc (33°F) D: 5 mA	F: 3.0 Vdc (85°F) D: 12 mA	AL: N/A AB: N/A	F: 4.9 Vdc (137°F) D: OK	A.
BYJTS018	CAB TROUBLE RISER 16A - SHS 1	ON/OFF	ON/OFF	Drop 6, Rack 1, Slot 7, Channel 2	F: N/A D: N/A	F: N/A D: N/A	AL: N/A AB: N/A	F: N/A D: OK	A.
ARMALW	HMT AREA GAMMA RADIATION MONITOR	ON/OFF	ON/OFF	Drop 8, Rack 2, Slot 4, Channel 11	F: N/A D: N/A	F: N/A D: N/A	AL: OK A AB: N/A	F: N/A D: OK A	A.
TT1004B	1/0#4 CABINET TEMP	50 TO 120 °F	4 TO 20 mA	Drop 9, Rack 1, Slot 6, Channel 5	F: 5.0 mA (54°F) D: 54°F	F: 12.0 mA (85°F) D: 12 mA	AL: N/A AB: N/A	F: 19.0 mA (116°F) D: 116/10.6	A.
FTES0002	VENT HEADER FLOW HIGH RANGE	-1000 TO 7333 CFM	0 TO 50 Vdc 4 to 33 Vdc 20 mA	Drop 13, Rack 1, Slot 8, Channel 5	F: 0.1 Vdc (-748 CFM) -8/0	F: 1.65 Vdc (4167 CFM) 1775	LO AL: (0.56 Vdc) 39, (425 CFM) 422 HI AL: (0.66 Vdc) 494, (675 CFM) 674	F: 3.2 Vdc (7081 CFM) 7190.6	A.

TABLE C (Cont.)									
TAG NAME	DESCRIPTION	SCALE/RANGE	INPUT SIGNAL RANGE	SIGNAL CONNECTION POINTS	LOW END READING	MID RANGE READING	ALARM/ABORT VALUES (CMCS)	HIGH END READING	TEST ENGINEER INITIALS
UPSFA1	UPS OUTPUT FAILURE ALARM	ON/OFF	ON/OFF	Drop 14, Rack 2, Slot 3, Channel 10	F: N/A D: N/A	F: N/A D: N/A	AL: YK A AB: N/A	F: N/A D: OK A	A
WHF1B1L	STR GAGE 1B-1 HI FREQ ALARM (LATCHED)	ON/OFF	ON/OFF	Drop 15, Rack 1, Slot 4, Channel 6	F: N/A D: N/A	F: N/A D: N/A	AL: YK A AB: N/A	F: N/A D: OK A	A
FTE50001	VENT HEADER FLOW LOW RANGE	0 TO 1275 CFM	1 TO 5 Vdc	Drop 16, Rack 1, Slot 6, Channel 7	F: 1.1 Vdc (32 CFM) D: 37.	F: 3.0 Vdc (638 CFM) D: 638	LO AL: (1.33 Vdc) 32 (425 CFM) 405 HI AL: (2.18 Vdc) 3.1 (675 CFM) 676 LO AB: (1.26 Vdc) 2.2 (400 CFM) 399.47 HI AB: (3.2 Vdc) 3.19 (700 CFM) 605	F: 4.9 Vdc (1243 CFM) D: 1243	A

5.6 SCREEN DISPLAY VERIFICATION CHECKS

- XX 5.6.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.
- XX 5.6.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.
- YY 5.6.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.

NOTE - The purpose of this test section is to verify that the displayed readouts for the SY-101 instrumentation, as read by the upgraded computer system, are consistent with the Genesis-based computer system. With the upgraded Station 5 computer in service for monitoring the SY-101 tank instrumentation, selected individual screen displays will be printed out. The Genesis-based Station 5 computer will then be placed in service to monitor the SY-101 instrumentation, and the same selected individual screen displays will be printed out. The instrumentation values recorded on the two sets of printouts will then be compared to verify proper functioning of the upgraded system.

XX 5.6.2 ACCESS AND PRINT the following screens:

• HVTALARM	• PUMPALRM	• STRNALM
• TEMPALM	• MANABRT	

X 5.6.3 EXIT the FIX32 program at all of the upgraded computers AND PLACE the GEN NODE DRIVE A/B Switch in the GENESIS position.

XX 5.6.4 START UP Genesis-based Station 5.

XX 5.6.5 ACCESS AND PRINT the following screens:

• HVTALARM	• PUMPALRM	• STRNALM
• TEMPALM	• MANABRT	

NOTE - There will be some minor differences in the recorded values for individual sensors due to normal signal variations, however, upgraded computer system and Genesis-based computer system readings should be within $\pm 5\%$ of each other.

X 5.6.6 COMPARE the values recorded on the two sets of printouts AND VERIFY that the values are approximately the same.

5.6 SCREEN DISPLAY VERIFICATION CHECKS (Cont.)

5.6.7 ACCESS AND PRINT the following screens:

✓ • MIT17B	✗ • MIT17C	✗ • PUMP
✗ • GASSUM	✗ • SUMMARY	✗ • TEMPRFL
✗ • ROLLOVER		

5.6.8 EXIT the Station 5 Genesis-based program AND PLACE the GEN NODE DRIVE A/B Switch in the FIX32 position.

5.6.9 START UP upgraded Station 5.

5.6.10 ACCESS AND PRINT the following screens:

✓ • MIT17B	✓ • MIT17C	✗ • PUMP
✗ • GASSUM	✗ • SUMMARY	✗ • TEMPRFL
✓ • ROLLOVER		

5.6.11 COMPARE the values recorded on the two sets of printouts AND VERIFY that the values are approximately the same.

5.6.12 ACCESS AND PRINT the following screens:

✗ • PUMPOPS	✗ • DACS	✗ • MININ
✓ • TBSTC		

5.6.13 EXIT the FIX program at upgraded computer Station 5 AND PLACE the GEN NODE DRIVE A/B Switch in the GENESIS position.

5.6.14 START UP Genesis-based Station 5.

5.6.15 ACCESS AND PRINT the following screens:

✗ • PUMPOPS	✗ • DACS	✗ • MININ1
✓ • MININ2	✓ • TBSTC	

5.6.16 COMPARE the values recorded on the two sets of printouts AND VERIFY that the values are approximately the same.

5.6.17 EXIT the Station 5 Genesis-based program AND PLACE the GEN NODE DRIVE A/B Switch in the FIX32 position.

5.6.18 START UP the upgraded computers.

5.6.19 ACCESS AND PRINT the TAGSTAT screen.

5.6 SCREEN DISPLAY VERIFICATION CHECKS (Cont.)

- x 5.6.20 COMPARE the values on the TAGSTAT printout with the values for the same tag names recorded on other printouts, AND VERIFY that the values are approximately the same.
- x 5.6.21 SIGN each of the printouts and at the completion of testing ATTACH the printouts to the completed test procedure.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

/ 2-12-99

 Test Director Signature Date

5.7 PUMP OPERATION CHECKS

- × 5.7.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.

 - × 5.7.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.
 - × 5.7.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.
- × 5.7.2 IF necessary to allow testing per this procedure section, THEN DISABLE the abort coils associated with any instruments that are sending erratic signals using the "ABRTENAB" screen.
- × 5.7.3 RESET the E-Stop pushbuttons AND VERIFY that both pushbuttons are illuminated.
- × 5.7.4 POSITION the E-Stop alarm silence switch to NORMAL.
- × 5.7.5 ENSURE that power supply local disconnect switches SY01A-WST-DS-001 and SY01A-WST-DS-002 are still administratively locked in OFF.
- × 5.7.6 REQUEST the WASM to close power supply circuit breakers SY272-EDS-BKR-123 and SY272-EDS-BKR-120.
- × 5.7.7 At Station 5, ACCESS the PUMP screen.
- × 5.7.8 At Station 6, ACCESS the PUMPALRM screen.
- × 5.7.9 At Station 8, ACCESS the WELCOME screen AND LOGIN as SUPER.
- × 5.7.10 ACCESS the P-RUN-VIS screen, ENSURE that Station 8 is selected as the pump control station, AND SELECT the CLOSE button.

5.7 PUMP OPERATION CHECKS (Cont.)

- ✓ 5.7.11 At Station 8, ACCESS the PUMPRUN screen AND PERFORM the following:
 - ✗ 5.7.11.1 IF the STOP TEST button at Station 8 is GREEN, THEN SELECT the STOP TEST button.
 - ✗ 5.7.11.2 IN the TEST SETUP portion of the screen, if necessary, SELECT the Test field AND ENTER 1.
 - ✗ 5.7.11.3 SELECT the SET VALUES button.
 - ✗ 5.7.11.4 SELECT the ENABLE TEST button.
 - ✗ 5.7.11.5 SELECT the START TEST button and, when the VSD is running at setpoint speed VERIFY that the displayed values for pump motor Speed and Amps are consistent with the Speed and Amps values displayed on the PUMP DRIVE VSD touch panel in the DACS Trailer. *99.52^{VSP} 99.52^{STA. 6}*
 - ✗ 5.7.11.6 VERIFY that the pump parameters displayed at Stations 5 and 6 are consistent with the parameters displayed at Station 8.
 - ✗ 5.7.11.7 At Station 6, VERIFY that the ALARM LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 169.8 and 1010 respectively.
 - ✗ 5.7.11.8 At Station 6, VERIFY that the ABORT LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 198.1 and 1020 respectively.
 - ✗ 5.7.11.9 WHEN the 30SEC - WARN 30 Seconds Until End of Test alarm is received, ACKNOWLEDGE the alarm.
 - ✗ 5.7.11.10 SELECT the ENABLE STOP button and then the flashing STOP TEST button to end the test run.
 - ✗ 5.7.11.11 VERIFY that the elapsed time is approximately 4 minutes 40 seconds. *4:38sec*
 - ✗ 5.7.11.12 VERIFY that the STOP TIME portion of the screen is displaying the time that the pump was stopped. *10:08:37*
 - ✗ 5.7.11.13 VERIFY that the E-Stop circuitry is not tripped.
- ✓ 5.7.12 At Station 6, ACCESS the WELCOME screen and LOGIN as SUPER.

5.7 PUMP OPERATION CHECKS (Cont.)

- ✓ 5.7.13 ACCESS the P-RUN-VIS screen, SELECT Station 6 as the pump control station, AND SELECT the CLOSE button.
- ✗ 5.7.14 At Station 8, ACCESS the PUMPALRM screen.
- ✗ 5.7.15 At Station 6, ACCESS the PUMPRUN screen AND PERFORM the following:
 - ✓ 5.7.15.1 IF the STOP TEST button at Station 6 is GREEN, THEN SELECT the STOP TEST button.
 - ✗ 5.7.15.2 IN the TEST SETUP portion of the screen, if necessary, SELECT the Test: field AND ENTER 1.
 - ✓ 5.7.15.3 SELECT the SET VALUES button.
 - ✗ 5.7.15.4 SELECT the ENABLE TEST button.
 - ✗ 5.7.15.5 SELECT the START TEST button and, when the VSD is running at setpoint speed VERIFY that the displayed values for pump motor Speed and Amps are consistent with the Speed and Amps values displayed on the PUMP DRIVE VSD touch panel in the DACS Trailer. *Spd. 8 150
Amps 99.3 99.3
Ind. 52.8 52.8*
 - ✗ 5.7.15.6 VERIFY that the pump parameters displayed at Stations 5 and 8 are consistent with the parameters displayed at Station 6.
 - ✗ 5.7.15.7 At Station 8, VERIFY that the ALARM LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 169.8 and 1010 respectively.
 - ✗ 5.7.15.8 At Station 8, VERIFY that the ABORT LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 198.1 and 1020 respectively.
 - ✓ 5.7.15.9 WHEN the 30SEC - WARN 30 Seconds Until End of Test alarm is received, ACKNOWLEDGE the alarm.
 - ✗ 5.7.15.10 WHEN the PBUMPTOUT Pump Bump Timeout Abort and ABRTCOIL PLC Abort Coil alarms are received, ACKNOWLEDGE the alarms.
 - ✓ 5.7.15.11 VERIFY that the E-Stops are tripped and silence the E Stop alarm horn.

5.7 PUMP OPERATION CHECKS (Cont.)

- ~~✓~~ 5.7.15.12 VERIFY that the elapsed time is approximately 5 minutes 0 seconds.
 *5 mins
1 seconds*
- ~~✓~~ 5.7.15.13 VERIFY that the STOP TIME portion of the screen is displaying the time that the pump was stopped.
 10:16:25
- ~~✓~~ 5.7.15.14 VERIFY that power supply circuit breakers SY272-EDS-BKR-123 and SY272-EDS-BKR-120 are tripped.
- ~~✓~~ 5.7.16 REQUEST the WASM to remove the administrative lock from power supply local disconnect switch SY01A-WST-DS-002 AND POSITION the Directional Drive Motor Local Panel Supply disconnect switch power to ON.
- ~~✓~~ 5.7.17 RESET the E-Stop pushbuttons AND VERIFY that both pushbuttons are illuminated.
- ~~✓~~ 5.7.18 POSITION the E-Stop alarm silence switch to NORMAL.
- ~~✓~~ 5.7.19 REQUEST the WASM to close power supply circuit breakers SY272-EDS-BKR-123 and SY272-EDS-BKR-120.
- ~~✓~~ 5.7.20 IF available, VERIFY that the in-tank video camera is ON and that the mixer pump is visible on the associated monitor.
- ~~✓~~ 5.7.21 At Station 6, ACCESS the PUMPALRM screen.
- ~~✓~~ 5.7.22 At Station 8, ACCESS the PUMP screen.
- ~~✓~~ 5.7.23 At Station 5, ACCESS the WELCOME screen AND LOGIN as SUPER.
- ~~✓~~ 5.7.24 ACCESS the P-RUN-VIS screen, SELECT Station 5 as the pump control station, AND SELECT the CLOSE button.

5.7 PUMP OPERATION CHECKS (Cont.)

✓ 5.7.25 At Station 5, ACCESS the PUMPRUN screen AND PERFORM the following:

- ✗ 5.7.25.1 IF the STOP TEST button at Station 5 is GREEN, THEN SELECT the STOP TEST button.
- ✗ 5.7.25.2 IN the TEST SETUP portion of the screen, SELECT the Test field AND ENTER 2.
- ✗ 5.7.25.3 SELECT the SET VALUES button.

CAUTION

STEP 5.7.25.4 WILL CAUSE ACTUAL MIXER PUMP ROTATION IN THE SY-101 TANK.

- ✗ NOTE - The Shift Manager will ensure that personnel in the SY Farm are notified of the mixer pump rotation and will direct the pump operators to observe that no personnel are in the cattle guarded area surrounding the pump.
- ✗ 5.7.25.4 SELECT the POSITION PUMP button.
- ✗ 5.7.25.5 WHEN the directional drive VSD is running at setpoint speed VERIFY that the displayed values for motor Speed and Amps are consistent with the Speed and Amps values displayed on the DIRECTIONAL DRIVE VSD touch panel in the DACS Trailer.
- ✗ 5.7.25.6 IF available, VERIFY that the mixer pump is rotating, as seen on the in-tank video camera monitor. *Shawna*
- ✗ 5.7.25.7 VERIFY that the directional drive motor parameters displayed at Station 8 are consistent with the parameters displayed at Station 5. *99.3 rpm, 2.3 amps*
- ✗ 5.7.25.8 WHEN the ENABLE TEST button turns GREEN, SELECT the STOP TEST button.
- ✗ 5.7.25.9 VERIFY that the displayed pump position is approximately 65 ° (63 to 67°).
- ✗ 5.7.26 At Station 5, ACCESS the PUMPALRM screen.
- ✗ 5.7.27 At Station 6, ACCESS the PUMP screen.
- ✗ 5.7.28 At Station 8, ACCESS the WELCOME screen.
- ✗ 5.7.29 ACCESS the P-RUN-VIS screen, SELECT Station 8 as the pump control station, AND SELECT the CLOSE button.

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5.7 PUMP OPERATION CHECKS (Cont.)

Y 5.7.30 At Station 8, ACCESS the PUMPRUN screen AND PERFORM the following:

X 5.7.30.1 IN the TEST SETUP portion of the screen, SELECT the Test field AND ENTER 26.

X 5.7.30.2 SELECT the SET VALUES button.

X 5.7.30.3 SELECT the ENABLE TEST button.

X 5.7.30.4 SELECT the START TEST button and, when the VSD is running at setpoint speed VERIFY that the displayed values for pump motor Speed and Amps are consistent with the Speed and Amps values displayed on the PUMP DRIVE VSD touch panel in the DACS Trailer.

X 5.7.30.5 VERIFY that the pump parameters displayed at Stations 5 and 6 are consistent with the parameters displayed at Station 8.

X 5.7.30.6 At Station 5, VERIFY that the ALARM LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 154.6 and 930 respectively.

X 5.7.30.7 At Station 5, VERIFY that the ABORT LIMIT values for Mixer Pump Motor Amps and Mixer Pump Speed are 180.3 and 940 respectively.

X 5.7.30.8 SELECT the ENABLE STOP and then the flashing STOP TEST buttons AND VERIFY that the pump run is stopped.

X 5.7.30.9 VERIFY that the E Stop circuitry is not tripped.

X 5.7.30.10 IN the TEST SETUP portion of the screen, SELECT the Test field AND ENTER 13.

X 5.7.30.11 SELECT the SET VALUES button.

CAUTION

STEP 5.7.30.12 WILL CAUSE ACTUAL MIXER PUMP ROTATION IN THE SY-101 TANK.

NOTE - The Shift Manager will ensure that personnel in the SY Farm are notified of the mixer pump rotation and will direct the pump operators to observe that no personnel are in the cattle guarded area surrounding the pump.

X 5.7.30.12 SELECT the POSITION PUMP button.

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5.8 YEAR 2000 COMPLIANCE CHECKS

Y 5.8.1 IF any discrepancy is noted during testing, THEN RECORD a description of the condition in Attachment 1.

5.8.1.1 For each discrepancy recorded, ENTER an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.

5.8.1.2 REPRODUCE Attachment 1 as needed, AND ATTACH the additional pages to this procedure, to record all discrepancies noted during testing.

NOTE - All computers will be running under WindowsNT Workstation or Server, version 4.0, Service Pack 3. Since the CPUs, BIOS and Operating Systems will be the same for all DACS computers, only one system (Station 5), running all of the applications, will be tested.

- The two PLCs, which are part of the DACS Trailer system, are identical. According to results of the Modicon Year 2000 evaluation, this model of PLC, which uses a 2-digit year field, has no problems regarding rollover, leap year, special dates, set date function, etc. through the year 2030. Since DACS does not use any PLC time or date fields, it is not anticipated that these PLCs will have any Year 2000 problems. One PLC will be tested concurrently with the Station 5 CPU and applications.

- Test data sheets and results are included in Table D, Tables and Data Sheets, for the two date transitions to be tested.

Y X 5.8.2 BOOT UP Station 5 to Windows NT.

Y X 5.8.3 VERIFY that the current version of the DACS PLC ladder logic (PLC306) is loaded on to the PLC to be tested and is being displayed at Station 1.

Y X 5.8.4 REFER to Table D for data sheets to be used during testing in this procedure section.

Y X 5.8.5 SELECT the data sheet associated with the time/date to be tested.

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5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

✕ 5.8.6 SET AND VERIFY the Station 5 clock as follows:

✕✕ 5.8.6.1 DOUBLE-CLICK on the time at the far right of the task bar to bring up the date/time properties applet.

NOTE - Setting the time to 10 minutes before midnight is only a guide. Shorter or longer times may be used for subsequent testing, depending on familiarity with the procedure.

✕✕ 5.8.6.2 SET the time to 10 minutes before midnight (23:50:00).

f 5.8.6.3 SET the date to the desired date AND SELECT OK.

✕ ✓ 5.8.6.4 VERIFY that the desired time appears on the task bar.

✕✕ 5.8.6.5 POINT to the time AND VERIFY that the desired date briefly appears.

✕✕ 5.8.6.6 INITIAL the data sheet.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

XX 5.8.7 SET AND MONITOR the PLC clock as follows:

XX 5.8.7.1 USING the Modsoft Set Hardware Clock menu item at Station 1, SET the time and date to the same time and date as that on Station 5.

NOTE - Dec in the Example column means Decimal.

- The display for Month is a number from 1 to 12, with 1 = January and 12 = December.
- In the example below, the date is 12/31/99 and the time is 23:55:30.

XX 5.8.7.2 MONITOR PLC registers 409995 through 410000 to determine the current time and date:

Register	Description	Example
409995	Month (1 - 12)	12 Dec
409996	Day of the month (1 - 31)	31 Dec
409997	Year (00 - 99)	99 Dec
409998	Hour in military time (0 - 23)	23 Dec
409999	Minute (0 - 59)	55 Dec
410000	Second (0 - 59)	30 Dec

XX 5.8.7.3 VERIFY that the desired date and time has been set in the PLC.

XX 5.8.7.4 INITIAL the data sheet.

XX 5.8.8 LOAD applications to be tested as follows:

NOTE - As part of the FIX32 startup process, the drivers that communicate with the variable frequency drives and the station watchdog timers software (which were developed internally using Visual Basic 4.0) will be automatically loaded, and will run in the background.

XX 5.8.8.1 START the Intellution FIX32 application by double-clicking on the FIX32 Startup icon.

5.8.8.2 ENSURE that the WELCOME screen is displayed.

XX 5.8.9 LOGIN to Station 5 as A.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

X 5.8.10 VERIFY that the desired date appears in the upper left-hand corner of the WELCOME screen and that the desired time appears in the upper right-hand corner of the screen.

X 5.8.10.1 INITIAL the data sheet.

X 5.8.11 ACCESS the TRENDS screen.

X 5.8.12 OPEN a 1-hour historical display plot of Tank Level, Strain.

X 5.8.13 VERIFY that the desired date and time appear at the right edge of the X-axis.

X 5.8.13.1 INITIAL the data sheet.

X 5.8.14 SELECT Exit from the File menu to exit the historical display plot.

X 5.8.15 ENSURE that the abort coil is reset and that the E Stop circuitry is reset.

NOTE - The presence of an audible alarm at Station 5 indicates that the PLC is functioning properly.

X 5.8.16 GENERATE a MIP00001 alarm at Station 1 by disabling address 100001 and forcing the value to 1.

X 5.8.16.1 INITIAL the data sheet.

X 5.8.17 SILENCE the audible alarm by pressing the <F12> key.

X 5.8.18 PRESS the <F4> key to access the ALARMSUM screen.

X 5.8.19 ACKNOWLEDGE the two MIP00001 alarms by selecting the ACK PAGE button.

NOTE - The year will be listed as two digits.

X 5.8.20 VERIFY that the desired date and time appear in the TIME IN and DATE IN columns.

X 5.8.20.1 INITIAL the data sheet.

X 5.8.21 SELECT the EVENT SUM button.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

NOTE - The file will have a YYMMDD file name, where YY is the last two digits of the year.

X 5.8.22 VERIFY that a file exists with a file name corresponding to the current date.

X 5.8.22.1 INITIAL the data sheet.

X 5.8.23 FROM the Select An Alarm/Event Summary File Box, SELECT the file name corresponding to the current date.

NOTE - The most recent recorded events will be displayed at the bottom of the list.

- The year will be listed as two digits.

X 5.8.24 VERIFY that the desired date and time appear at the beginning of the lines for the recent alarms and events that have been logged to the file.

X 5.8.24.1 INITIAL the data sheet.

X 5.8.25 SELECT Done.

X 5.8.26 FROM the WindowsNT Start Menu, OPEN Windows NT Explorer AND BROWSE to the C:\Fix32\Htrdata\Station5 sub-directory.

NOTE - Files have a YYMMDDHH.h04 file name, where YY represents the last two digits of the year, and HH represents the most recent 4-hour time period, in military time format (HH = 00, 04, 08, 12, 16 or 20). For example HH=20 corresponds to a data file containing data from 20:00 (8:00 PM) to 00:00 (midnight).

- The new file for the next 4-hour time period may also be present in the sub-directory, since Intellution creates overlapping files as the next 4-hour time period approaches.

X 5.8.27 VERIFY that a file exists with the file name corresponding to the current date.

X 5.8.27.1 INITIAL the data sheet.

X 5.8.28 RETURN to the ALARMSUM screen.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

X✓ 5.8.29 CLEAR the MIP00001 alarm by forcing the value of address 100001 to 0 and enabling address 100001.

X✓ 5.8.30 ACCESS the CSMAN screen AND RESET the abort coil.

X✓ 5.8.31 ACCESS the PUMPRUN screen at Station 5.

X✓ 5.8.32 ENSURE that power supply circuit breakers SY272-EDS-BKR-123 and SY272-EDS-BKR-120 are closed.

NOTE - The starting and stopping of the VSD indicates that the internally developed Visual Basic Programs are functioning properly.

X✓ 5.8.33 SELECT the Angle: field in the TEST SETUP portion of the screen AND INPUT a value 5 degrees greater than the present value displayed in the Angle: field.

X✓ 5.8.34 SELECT the SET VALUES AND POSITION PUMP buttons to start the Directional Motor VSD.

X✓ 5.8.35 AFTER the directional motor VSD is operating, SELECT the STOP TEST button to stop the directional motor VSD.

X✓ 5.8.36 SELECT the angle field AND ENTER a value equal to the displayed value for pump position.

NOTE - The starting and stopping of the VSD indicates that the internally developed Visual Basic Programs are functioning properly.

X✓ 5.8.37 SELECT the SET VALUES, ENABLE TEST, and START TEST buttons to start the Pump Motor VSD.

NOTE - The stopping of the VSD indicates that the internally developed Visual Basic Programs are functioning properly.

X✓ 5.8.38 SELECT the ENABLE STOP and STOP TEST buttons to stop the Pump Motor VSD.

X✓ 5.8.38.1 INITIAL the data sheet.

NOTE - The ROLLOVER screen is to be displayed before the midnight time, and remain up through the transition past midnight to the next day.

XX 5.8.39 ACCESS the ROLLOVER screen.

XX 5.8.40 VERIFY that all 30-second trend plots currently displayed on the screen plot continuously as the time changes past midnight and the date changes to the next day.

X✓ 5.8.40.1 INITIAL the data sheet.

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5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

✓X 5.8.41 VERIFY that the desired date appears in the upper left-hand corner of the ROLLOVER screen and that the desired time appears in the upper right-hand corner of the screen.

XX 5.8.41.1 INITIAL the data sheet.

XX 5.8.42 ACCESS the TRENDS screen.

✓X 5.8.43 OPEN a 1-hour historical display plot of Tank Level, Strain.

✓X 5.8.44 VERIFY that the desired dates and times appear at both edges of the X-axis.

XX 5.8.44.1 INITIAL the data sheet.

XX 5.8.45 EXIT the historical display plot.

XX 5.8.46 MONITOR PLC registers 409995 through 410000 to determine the current time and date, AND VERIFY that the desired date and time are being indicated by the PLC.

XX 5.8.46.1 INITIAL the data sheet.

✓X 5.8.47 GENERATE a MIP00001 alarm at Station 1 by disabling address 100001 and forcing the value to 1.

XX 5.8.47.1 INITIAL the data sheet.

✓X 5.8.48 SILENCE the audio alarm by pressing the <F12> key.

XX 5.8.49 ACCESS the ALARMSUM screen.

XX 5.8.50 ACKNOWLEDGE all alarms.

✓X 5.8.51 VERIFY that the desired date and time appear in the TIME IN and DATE IN columns.

✓X 5.8.51.1 INITIAL the data sheet.

✓X 5.8.52 SELECT the EVENT SUMM button.

✓X 5.8.53 VERIFY that a file exists with the file name corresponding to the current date.

XX 5.8.53.1 INITIAL the data sheet.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

- X 5.8.54 FROM the SELECT An Alarm/Event Summary File Box, SELECT the file name corresponding to the current date.
- X 5.8.55 VERIFY that the desired date and time appear at the beginning of the lines for the recent alarms and events that have been logged to the file.
- X 5.8.55.1 INITIAL the data sheet.
- X 5.8.56 SELECT Done.
- X 5.8.57 OPEN Windows NT Explorer AND BROWSE to the C:\Fix32\Htrdata\Station5 sub-directory.
- X 5.8.58 VERIFY that a file exists with the file name corresponding to the current date.
- X 5.8.58.1 INITIAL the data sheet.
- X 5.8.59 RETURN to the ALARMSUM screen.
- X 5.8.60 CLEAR the MIP00001 alarm by forcing the value of address 100001 to 0 and enabling address 100001.
- X 5.8.61 ACCESS the CSMAIN screen AND RESET the abort coil.
- X 5.8.62 RESET the E Stop pushbuttons.
- X 5.8.63 REQUEST the WASM to close power supply circuit breakers SY272-EDS-BKR-123 and SY272-EDS-BKR-120.
- X 5.8.64 AT Station 5, ACCESS the PUMPRUN screen.
- 5.8.65 SELECT the Angle: field in the TEST SETUP portion of the screen AND INPUT a value 5 degrees greater than the present value displayed in the Angle: field.
- X 5.8.66⁶⁷ AFTER the directional motor VSD is operating, SELECT the STOP TEST button to stop the directional motor VSD.
- X 5.8.67⁶⁸ SELECT the angle field AND ENTER a value equal to the displayed value for pump position.
- X 5.8.68⁶⁶ SELECT the SET VALUES and POSITION PUMP buttons to start the Directional Motor VSD.
- X 5.8.69 SELECT the SET VALUES, ENABLE TEST, and START TEST buttons to start the Pump Motor VSD.
- X 5.8.70 SELECT the ENABLE STOP and STOP TEST buttons.
- X 5.8.70.1 INITIAL the data sheet.

5.8 YEAR 2000 COMPLIANCE CHECKS (Cont.)

✓ X 5.8.71 VERIFY the Station 5 BIOS clock as follows:

X X 5.8.71.1 ACCESS the WELCOME screen.

X X 5.8.71.2 SELECT the EXIT button, then the YES button, to exit VIEW.

X X 5.8.71.3 POWER DOWN and THEN RE-START the Station 5 PC.

X X 5.8.71.4 VERIFY that the desired time is displayed on the Station 5 task bar.

X X 5.8.71.5 POINT to the time AND VERIFY that the desired date is displayed briefly.

X X 5.8.71.6 INITIAL the data sheet.

X X 5.8.71.7 LOGIN to Station 5 as A.

5.8.72 REPEAT Steps 5.8.4 through 5.8.71.7 for the remaining date transition THEN GO TO Step 5.8.73.

5.8.73 VERIFY that all data sheets have been properly completed... & 2-12-99

~~5.8.74~~ ^{and} RESET DATE/TIME PROPERTIES FOLLOWING TESTING TO CURRENT VALUES

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

/ 2/12/99
Test Director Signature Date

TABLE D - YEAR 2000 COMPLIANCE CHECKS

Transition From 12/31/1999 to 01/01/2000 (Change of Millennium)

Item No.	Procedure Step No.	Brief Description of Item to be Checked	Expected Result	As Expected?	INITIAL
1	5.8.6.6	Desired time and date set at Station 5	23:5x December 31, 1999	☒ Yes ☐ No	<i>[Signature]</i>
2	5.8.7.4	Desired date and time set in the PLC	Reg. 409995 to 410000: 12, 31, 99, 23, 5x, xx	☐ Yes ☐ No	<i>[Signature]</i>
3	5.8.10.1	Menu bar date and time correct	12/31/1999 23:5x:xx	☒ Yes ☐ No	<i>[Signature]</i>
4	5.8.13.1	Historical display plot time and date correct	23:5x:xx 12/31/1999	☒ Yes ☐ No	<i>[Signature]</i>
5	5.8.16.1	PLC functioning properly	Audible alarm	☒ Yes ☐ No	<i>[Signature]</i>
6	5.8.20.1	ALARMSUM TIME IN and DATE IN correct	23:5x:xx 12/31/99 23:5x:xx 12/31/99	☒ Yes ☐ No	<i>[Signature]</i>
7	5.8.22.1	Event summary file name correct	991231	☐ Yes ☐ No	<i>[Signature]</i>
8	5.8.24.1	Event summary file contents date correct	12/31/99	☒ Yes ☐ No	<i>[Signature]</i>
9	5.8.27.1	Historical data file name correct	99123120.ho4	☒ Yes ☐ No	<i>[Signature]</i>
10	5.8.38.1	Visual Basic programs functioning properly	Directional & Pump Motor VSDs start and stop	☒ Yes ☐ No	<i>[Signature]</i>
11	5.8.40.1	ROLLOVER 30 second trends plot continuously past midnight	Continuous plots with no interruptions or freeze-ups	☒ Yes ☐ No	<i>[Signature]</i>
12	5.8.41.1	Menu bar date and time correct	01/01/2000 00:0x:xx	☒ Yes ☐ No	<i>[Signature]</i>
13	5.8.44.1	Historical display plot time and date correct	23:0x:xx 00:0x:xx 12/31/1999 01/01/2000	☐ Yes ☐ No	<i>[Signature]</i>
14	5.8.46.1	Desired date and time set in the PLC	Reg. 409995 to 410000: 1, 1, 0, 0, xx, xx	☐ Yes ☐ No	<i>[Signature]</i>
15	5.8.47.1	PLC functioning properly	Audio Alarm	☒ Yes ☐ No	<i>[Signature]</i>
16	5.8.51.1	ALARMSUM TIME IN and DATE IN correct	00:0x:xx 01/01/00 00:0x:xx 01/01/00	☒ Yes ☐ No	<i>[Signature]</i>
17	5.8.53.1	Event summary file name correct	000101	☒ Yes ☐ No	<i>[Signature]</i>
18	5.8.55.1	Event summary file contents date correct	01/01/00	☒ Yes ☐ No	<i>[Signature]</i>
19	5.8.58.1	Historical data file name correct	00010100.ho4	☐ Yes ☐ No	<i>[Signature]</i>
20	5.8.70.1	Visual Basic programs functioning properly	Directional & Pump Motor VSDs start and stop	☐ Yes ☐ No	<i>[Signature]</i>
21	5.8.71.6	Desired time and date appears at Station 5 after cold boot	00:xx January 01, 2000	☒ Yes ☐ No	<i>[Signature]</i>

TABLE D - YEAR 2000 COMPLIANCE CHECKS (Cont.)

Transition From 02/28/2000 to 02/29/2000 (Year 2000 Leap Year)

Item No.	Procedure Step No.	Brief Description of Item to be Checked	Expected Result	As Expected?	INITIAL
1	5.8.6.6	Desired time and date set at Station 5	23:5x February 28, 2000	☒ Yes ☐ No	A
2	5.8.7.4	Desired date and time set in the PLC	Reg. 409995 to 410000: 2, 28, 0, 23, 5x, xx	☒ Yes ☐ No	A
3	5.8.10.1	Menu bar date and time correct	02/28/2000 23:5x:xx	☒ Yes ☐ No	A
4	5.8.13.1	Historical display plot time and date correct	23:5x:xx 02/28/2000	☒ Yes ☐ No	A
5	5.8.16.1	PLC functioning properly	Audible alarm	☒ Yes ☐ No	A
6	5.8.20.1	ALARMSUM TIME IN and DATE IN correct	23:5x:xx 02/28/00 23:5x:xx 02/28/00	☒ Yes ☐ No	A
7	5.8.22.1	Event summary file name correct	000228	☒ Yes ☐ No	A
8	5.8.24.1	Event summary file contents date correct	02/28/00	☒ Yes ☐ No	A
9	5.8.27.1	Historical data file name correct	00022820.ho4	☒ Yes ☐ No	A
10	5.8.38.1	Visual Basic programs functioning properly	Directional & Pump Motor VSDs start and stop	☒ Yes ☐ No	A
11	5.8.40.1	ROLLOVER 30 second trends plot continuously past midnight	Continuous plots with no interruptions or freeze-ups	☒ Yes ☐ No	A
12	5.8.41.1	Menu bar date and time correct	02/29/2000 00:0x:xx 02:0x:xx 00:0x:xx	☒ Yes ☐ No	A
13	5.8.44.1	Historical display plot time and date correct	23:0x:xx 00:0x:xx 02/28/2000 02/29/2000	☒ Yes ☐ No	A
14	5.8.46.1	Desired date and time set in the PLC	Reg. 409995 to 410000: 2, 29, 0, 0, xx, xx	☒ Yes ☐ No	A
15	5.8.47.1	PLC functioning properly	Audio Alarm	☒ Yes ☐ No	A
16	5.8.51.1	ALARMSUM TIME IN and DATE IN correct	00:0x:xx 02/29/00 00:0x:xx 02/29/00	☒ Yes ☐ No	A
17	5.8.53.1	Event summary file name correct	000229	☒ Yes ☐ No	A
18	5.8.55.1	Event summary file contents date correct	02/29/00	☒ Yes ☐ No	A
19	5.8.58.1	Historical data file name correct	00022900.ho4	☒ Yes ☐ No	A
20	5.8.70.1	Visual Basic programs functioning properly	Directional & Pump Motor VSDs start and stop	☒ Yes ☐ No	A
21	5.8.71.6	Desired time and date appears at Station 5 after cold boot	00:xx February 29, 2000	☒ Yes ☐ No	A

ATTACHMENT 1 - EXCEPTION LIST

EXCEPTION	STEP	EXCEPTION DESCRIPTION	EXCEPTION RESOLUTION	RESOLUTION	DATE
1	5.1.16.3	When placing related tags to Auto the screen says Auto Enable	Pen and Ink change made to Working Copy	Auto word Enable following Auto	2/11/99
2	5.5.12	Vent Header Temp Sensors requires an analog input signal range	Pen and Ink change. Stated input signal range of 1-5 Vdc misapplied	Crossdown Data 1-5 vdc and 0-5vdc	2/12/99
3	5.5.22	Vent Header Flowing Range sensor requires an analog input signal range	Pen and Ink change. Stated input signal range of 0 to 3 vdc misapplied	crossdown Crossdown set to 0-5vdc	2/12/99
4	5.8.41.1	Expected result being "Menu bar date and time correct" 00:0X:XX	Pen and Ink change. Make pen link	Make pen link change to procedure	2/12/99
5	5.8.68	Step 5.8.68 out of sequence completion of step 5.8.65	Pen and Ink change. Make pen link	Make pen link change to procedure	2/12/99
6	5.8.73	Step requires resetting date and time back to present to 11:59:10 completion of New Record of Time (Clock)	Pen and Ink change. Make pen link	Make pen link change to procedure	2/12/99

ATTACHMENT 2 - MEASUREMENT AND TEST EQUIPMENT RECORD SHEET

[illegible]

ATTACHMENT 3 - FINAL PROCEDURE ACCEPTANCE SHEET

Completion of this procedure has demonstrated that:

- Operator display and control screens are adequate for operation, control, and monitoring of the DACS.
- Alarm notification and display are proper for operation, control, and monitoring of the DACS.
- Abort notification and display are proper for operation, control, and monitoring of the DACS.
- The DACS operator control interface capabilities have been tested to be adequate and satisfactory.
- Control of pump motor and directional drive motor VSDs by the DACS is satisfactory.
- Alarm and event logging is satisfactory and adequate.
- Real-time and historical trending are satisfactory and adequate.
- The DACS interface with the PLCs is satisfactory and adequate for system operation, monitoring, and control.
- System security, including passwords and levels of authorization for system use, is satisfactory and adequate.
- Hardware and software components are compliant with requirements for the year 2000.
- A record of all noted deficiencies was kept on Attachment 1. Exception List, and all recorded exceptions have been resolved and the resolutions approved.

Approved by:

R E Larson / 2/16/99
R.E. Larson, Engineering Manager Date

G. J. Gault / 2/16/99
G. J. Gault, Cognizant Engineer Date

Type	Document No.	Rev/Mod	Release Date	Page
CONTINUOUS	OTP-440-002	A-0	01/29/99	59 of 60

PROCEDURE HISTORY SIGNATURE SHEET

Type	Document No.	Rev/Mod	Release Date	Page
CONTINUOUS	OTP-440-002	A-0	01/29/99	60 of 60

00:57:44.00 FLO 23.06

HELP

HELP

[**TAGSTAT**]

MINI

ABRTENAB

ALARM	NORMAL:
STATUS	FORCED:

ENABLED	DISABLED
<p>1. ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24 ☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐ 32 ☐ 33 ☐ 34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ 39 ☐ 40 ☐ 41 ☐ 42 ☐ 43 ☐ 44 ☐ 45 ☐ 46 ☐ 47 ☐ 48 ☐ 49 ☐ 50 ☐ 51 ☐ 52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐ 57 ☐ 58 ☐ 59 ☐ 60 ☐ 61 ☐ 62 ☐ 63 ☐ 64 ☐ 65 ☐ 66 ☐ 67 ☐ 68 ☐ 69 ☐ 70 ☐ 71 ☐ 72 ☐ 73 ☐ 74 ☐ 75 ☐ 76 ☐ 77 ☐ 78 ☐ 79 ☐ 80 ☐ 81 ☐ 82 ☐ 83 ☐ 84 ☐ 85 ☐ 86 ☐ 87 ☐ 88 ☐ 89 ☐ 90 ☐ 91 ☐ 92 ☐ 93 ☐ 94 ☐ 95 ☐ 96 ☐ 97 ☐ 98 ☐ 99 ☐ 100 ☐ 101 ☐ 102 ☐ 103 ☐ 104 ☐ 105 ☐ 106 ☐ 107 ☐ 108 ☐ 109 ☐ 110 ☐ 111 ☐ 112 ☐ 113 ☐ 114 ☐ 115 ☐ 116 ☐ 117 ☐ 118 ☐ 119 ☐ 120 ☐ 121 ☐ 122 ☐ 123 ☐ 124 ☐ 125 ☐ 126 ☐ 127 ☐ 128 ☐ 129 ☐ 130 ☐ 131 ☐ 132 ☐ 133 ☐ 134 ☐ 135 ☐ 136 ☐ 137 ☐ 138 ☐ 139 ☐ 140 ☐ 141 ☐ 142 ☐ 143 ☐ 144 ☐ 145 ☐ 146 ☐ 147 ☐ 148 ☐ 149 ☐ 150 ☐ 151 ☐ 152 ☐ 153 ☐ 154 ☐ 155 ☐ 156 ☐ 157 ☐ 158 ☐ 159 ☐ 160 ☐ 161 ☐ 162 ☐ 163 ☐ 164 ☐ 165 ☐ 166 ☐ 167 ☐ 168 ☐ 169 ☐ 170 ☐ 171 ☐ 172 ☐ 173 ☐ 174 ☐ 175 ☐ 176 ☐ 177 ☐ 178 ☐ 179 ☐ 180 ☐ 181 ☐ 182 ☐ 183 ☐ 184 ☐ 185 ☐ 186 ☐ 187 ☐ 188 ☐ 189 ☐ 190 ☐ 191 ☐ 192 ☐ 193 ☐ 194 ☐ 195 ☐ 196 ☐ 197 ☐ 198 ☐ 199 ☐ 200 ☐ 201 ☐ 202 ☐ 203 ☐ 204 ☐ 205 ☐ 206 ☐ 207 ☐ 208 ☐ 209 ☐ 210 ☐ 211 ☐ 212 ☐ 213 ☐ 214 ☐ 215 ☐ 216 ☐ 217 ☐ 218 ☐ 219 ☐ 220 ☐ 221 ☐ 222 ☐ 223 ☐ 224 ☐ 225 ☐ 226 ☐ 227 ☐ 228 ☐ 229 ☐ 230 ☐ 231 ☐ 232 ☐ 233 ☐ 234 ☐ 235 ☐ 236 ☐ 237 ☐ 238 ☐ 239 ☐ 240 ☐ 241 ☐ 242 ☐ 243 ☐ 244 ☐ 245 ☐ 246 ☐ 247 ☐ 248 ☐ 249 ☐ 250 ☐ 251 ☐ 252 ☐ 253 ☐ 254 ☐ 255 ☐ 256 ☐ 257 ☐ 258 ☐ 259 ☐ 260 ☐ 261 ☐ 262 ☐ 263 ☐ 264 ☐ 265 ☐ 266 ☐ 267 ☐ 268 ☐ 269 ☐ 270 ☐ 271 ☐ 272 ☐ 273 ☐ 274 ☐ 275 ☐ 276 ☐ 277</p>	

ENABLED	DISABLED
<p>1. ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24 ☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐ 32 ☐ 33 ☐ 34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ 39 ☐ 40 ☐ 41 ☐ 42 ☐ 43 ☐ 44 ☐ 45 ☐ 46 ☐ 47 ☐ 48 ☐ 49 ☐ 50 ☐ 51 ☐ 52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐ 57 ☐ 58 ☐ 59 ☐ 60 ☐ 61 ☐ 62 ☐ 63 ☐ 64 ☐ 65 ☐ 66 ☐ 67 ☐ 68 ☐ 69 ☐ 70 ☐ 71 ☐ 72 ☐ 73 ☐ 74 ☐ 75 ☐ 76 ☐ 77 ☐ 78 ☐ 79 ☐ 80 ☐ 81 ☐ 82 ☐ 83 ☐ 84 ☐ 85 ☐ 86 ☐ 87 ☐ 88 ☐ 89 ☐ 90 ☐ 91 ☐ 92 ☐ 93 ☐ 94 ☐ 95 ☐ 96 ☐ 97 ☐ 98 ☐ 99 ☐ 100 ☐ 101 ☐ 102 ☐ 103 ☐ 104 ☐ 105 ☐ 106 ☐ 107 ☐ 108 ☐ 109 ☐ 110 ☐ 111 ☐ 112 ☐ 113 ☐ 114 ☐ 115 ☐ 116 ☐ 117 ☐ 118 ☐ 119 ☐ 120 ☐ 121 ☐ 122 ☐ 123 ☐ 124 ☐ 125 ☐ 126 ☐ 127 ☐ 128 ☐ 129 ☐ 130 ☐ 131 ☐ 132 ☐ 133 ☐ 134 ☐ 135 ☐ 136 ☐ 137 ☐ 138 ☐ 139 ☐ 140 ☐ 141 ☐ 142 ☐ 143 ☐ 144 ☐ 145 ☐ 146 ☐ 147 ☐ 148 ☐ 149 ☐ 150 ☐ 151 ☐ 152 ☐ 153 ☐ 154 ☐ 155 ☐ 156 ☐ 157 ☐ 158 ☐ 159 ☐ 160 ☐ 161 ☐ 162 ☐ 163 ☐ 164 ☐ 165 ☐ 166 ☐ 167 ☐ 168 ☐ 169 ☐ 170 ☐ 171 ☐ 172 ☐ 173 ☐ 174 ☐ 175 ☐ 176 ☐ 177 ☐ 178 ☐ 179 ☐ 180 ☐ 181 ☐ 182 ☐ 183 ☐ 184 ☐ 185 ☐ 186 ☐ 187 ☐ 188 ☐ 189 ☐ 190 ☐ 191 ☐ 192 ☐ 193 ☐ 194 ☐ 195 ☐ 196 ☐ 197 ☐ 198 ☐ 199 ☐ 200 ☐ 201 ☐ 202 ☐ 203 ☐ 204 ☐ 205 ☐ 206 ☐ 207 ☐ 208 ☐ 209 ☐ 210 ☐ 211 ☐ 212 ☐ 213 ☐ 214 ☐ 215 ☐ 216 ☐ 217 ☐ 218 ☐ 219 ☐ 220 ☐ 221 ☐ 222 ☐ 223 ☐ 224 ☐ 225 ☐ 226 ☐ 227 ☐ 228 ☐ 229 ☐ 230 ☐ 231 ☐ 232 ☐ 233 ☐ 234 ☐ 235 ☐ 236 ☐ 237 ☐ 238 ☐ 239 ☐ 240 ☐ 241 ☐ 242 ☐ 243 ☐ 244 ☐ 245 ☐ 246 ☐ 247 ☐ 248 ☐ 249 ☐ 250 ☐ 251 ☐ 252 ☐ 253 ☐ 254 ☐ 255 ☐ 256 ☐ 257 ☐ 258 ☐ 259 ☐ 260 ☐ 261 ☐ 262 ☐ 263 ☐ 264 ☐ 265 ☐ 266 ☐ 267 ☐ 268 ☐ 269 ☐ 270 ☐ 271 ☐ 272 ☐ 273 ☐ 274 ☐ 275 ☐ 276 ☐ 277</p>	

DECISION

REQUIRES
OPERATOR
PASSWORD

STATUS
TAG

NORMAL:
FOULLED:

TO WIN

REQUIRES
SUPERVISOR
PASSWORD

[illegible]

112.7	°F	TIR17B01
114.8	°F	TIR17B02
117.3	°F	TIR17B03
119.7	°F	TIR17B04
119.9	°F	TIR17B05
120.2	°F	TIR17B06
120.8	°F	TIR17B07
120.1	°F	TIR17B08
120.3	°F	TIR17B09
120.8	°F	TIR17B10
120.1	°F	TIR17B11
120.2	°F	TIR17B12
121.0	°F	TIR17B13
119.9	°F	TIR17B14
120.0	°F	TIR17B15
119.9	°F	TIR17B16
119.9	°F	TIR17B17

TIR17B18	120.0 °F	2.8 in/in	-12.2 in/in	130.1 °F	0.0 RPM	0.0 AMPS	0.1 PSIG	15.0 PSIG	30 DEG	0.35 mR/hr
TIR17B19	119.4 °F		25.2 in/in	131.6 °F			-2.5 PSIG	-1.8 PSIG		
TIR17B20	109.4 °F						0.1 PSIG	15.0 PSIG		
TIR17B21	93.3 °F						-2.5 PSIG	-1.8 PSIG		
TIR17B22	87.7 °F						0.1 PSIG	15.0 PSIG		
WIR12A01							-2.5 PSIG	-1.8 PSIG		
WIR12A03							0.1 PSIG	15.0 PSIG		
WIR12A04							-2.5 PSIG	-1.8 PSIG		
MIP00001							0.1 PSIG	15.0 PSIG		
TIR12A01							-2.5 PSIG	-1.8 PSIG		
TIR12A02							0.1 PSIG	15.0 PSIG		
VR232050							-2.5 PSIG	-1.8 PSIG		
VR232040							0.1 PSIG	15.0 PSIG		
PCR12A01							-2.5 PSIG	-1.8 PSIG		
PITNO110							0.1 PSIG	15.0 PSIG		
PITNO111							-2.5 PSIG	-1.8 PSIG		
ZIMPE142							0.1 PSIG	15.0 PSIG		
ZIMPE112							-2.5 PSIG	-1.8 PSIG		
ARMGAMMA							0.1 PSIG	15.0 PSIG		

ALARM SUMMARY

ACK	TIME IN	TAGNAME	DESCRIPTION
-----	---------	---------	-------------

STATUS

SIMN ENTN VALUE UNITS

Revised: *Gregory J. Smith*

PAGE BACK	INSTRUMENT TREE (2) RISER 17C (MIT)	[MIT17C]	MAP	CS	MS	AS
			13:15:00	02/12/99		
			DACS TEST	U3.05		
					MIT 17B	

	5 u"/IN	1 —	-6.0 IN HG
		1 —	-57 u"/IN
87.20 °F	402" (21)	(22)	425" — 70.00 °F
		(20)	392" — 93.30 °F
70.00 °F	364" (19)	(18)	340" — 119.90 °F
		(17)	316" — 120.30 °F
120.60 °F	292" (16)	(15)	244" — 121.30 °F
121.30 °F	232" (14)	(13)	220" — 121.40 °F
121.40 °F	208" (12)	(11)	196" — 121.10 °F
121.10 °F	172" (10)	(9)	148" — 121.00 °F
121.10 °F	124" (8)	(7)	112" — 120.80 °F
121.00 °F	100" (6)	(5)	76" — 121.00 °F
121.00 °F	52" (4)	(3)	28" — 120.10 °F
116.40 °F	16" (2)	(1)	4" — 111.60 °F

NOTE: ELEVATIONS ARE
WITH RESPECT TO
THE BOTTOM OF
THE TANK.

PASSWORD - SECURITY MENU

Node Name
Password to LOGON
Password to LOGOFF

Current Security Level 0
New password
Current Owner

Default
Security Level 0

ALARM HALM 44R12002 GEN-RE

MIT 17C

5 uIN/IN		2	1	56 uIN/IN
92.8 °F	425"	(22)	(21)	402" 86.4 °F
119.2 °F	392"	(20)	(19)	364"
120.0 °F	340"	(18)	(17)	316" 119.7 °F
120.6 °F	292"	(16)	(15)	244" 120.6 °F
120.6 °F	232"	(14)	(13)	220" 120.4 °F
120.6 °F	208"	(12)	(11)	196" 120.6 °F
120.5 °F	172"	(10)	(9)	148" 120.5 °F
120.6 °F	124"	(8)	(7)	112" 120.3 °F
120.6 °F	100"	(6)	(5)	76" 120.7 °F
120.3 °F	52"	(4)	(3)	28" 119.4 °F
115.7 °F	16"	(2)	(1)	4" 111.0 °F

NOTE:
Elevations Are With
Respect To The
Bottom Of The Tank

ALARM
SUMMARY

ACK	TIME IN	TAGNAME	DESCRIPTION	STATUS	VALUE	UNITS
✓	13:27:52	GC2-INST	Instrument Problem - GC2	CTN		PROBLEM
✓	13:27:47	GC2-ZVAL	GC-2 Zero Value Alarm	CTN		ALARM

Reviewed: *Boyd Bank*

Page Back	SUMMARY INFORMATION				[SUMMARY]	MAP	CS	MS	AS																																																						
<table border="1"> <tr> <th colspan="2">VENTILATION HEADER</th> </tr> <tr> <td>FLOW LOW</td> <td>0.00 CFM</td> </tr> <tr> <td>FLOW HIGH</td> <td>-1000.0 CFM</td> </tr> <tr> <td>HUMIDITY</td> <td>0.00 % RH</td> </tr> <tr> <td>TEMPERATURE</td> <td>30.00 ° F</td> </tr> </table>					VENTILATION HEADER		FLOW LOW	0.00 CFM	FLOW HIGH	-1000.0 CFM	HUMIDITY	0.00 % RH	TEMPERATURE	30.00 ° F	<table border="1"> <tr> <th colspan="2">IN-TANK PARAMETERS</th> </tr> <tr> <td>ENRAF 1A LEVEL</td> <td>375.00 INCHES</td> </tr> <tr> <td>ENRAF 1C LEVEL</td> <td>375.00 INCHES</td> </tr> <tr> <td>PRESSURE 17B</td> <td>-5.00 IN WG</td> </tr> <tr> <td>PRESSURE 17C</td> <td>-6.00 IN WG</td> </tr> </table>					IN-TANK PARAMETERS		ENRAF 1A LEVEL	375.00 INCHES	ENRAF 1C LEVEL	375.00 INCHES	PRESSURE 17B	-5.00 IN WG	PRESSURE 17C	-6.00 IN WG	<table border="1"> <tr> <td>13:18:46</td> <td>02/12/99</td> </tr> <tr> <td>DACS TEST</td> <td>03.05</td> </tr> </table>		13:18:46	02/12/99	DACS TEST	03.05	<table border="1"> <tr> <td>GASSUM</td> </tr> <tr> <td>ROLLQUER</td> </tr> </table>		GASSUM	ROLLQUER																								
VENTILATION HEADER																																																															
FLOW LOW	0.00 CFM																																																														
FLOW HIGH	-1000.0 CFM																																																														
HUMIDITY	0.00 % RH																																																														
TEMPERATURE	30.00 ° F																																																														
IN-TANK PARAMETERS																																																															
ENRAF 1A LEVEL	375.00 INCHES																																																														
ENRAF 1C LEVEL	375.00 INCHES																																																														
PRESSURE 17B	-5.00 IN WG																																																														
PRESSURE 17C	-6.00 IN WG																																																														
13:18:46	02/12/99																																																														
DACS TEST	03.05																																																														
GASSUM																																																															
ROLLQUER																																																															
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ALARM DIG CCI-INST GEN-NE																																																															

02/12/1999

MAP

Summary Information

PRINT

13:30:53

DACS v4.00

PLC v3.08

HELP

[SUMMARY]

GASSUM

ROLLOVER

VENTILATION HEADER

Flow - Low 0.00 CFM

Flow - High 4000.00 CFM

Humidity 800 20 % RH

Temperature 910 22 °F

IN-TANK PARAMETERS

MIT 17B TEMPERATURES - °F

22	87.7 °F	11	120.3 °F
21	93.4 °F	10	120.8 °F
20	109.7 °F	09	120.3 °F
19	119.5 °F	08	120.4 °F
18	120.0 °F	07	120.7 °F
17	120.0 °F	06	120.4 °F
16	119.8 °F	05	120.1 °F
15	119.9 °F	04	119.6 °F
14	120.2 °F	03	117.6 °F
13	121.0 °F	02	115.2 °F
12	120.2 °F	01	112.6 °F

MIT 17C TEMPERATURES - °F

21	86.5 °F	10	120.5 °F
20	92.7 °F	09	120.5 °F
18	119.2 °F	08	120.5 °F
17	119.8 °F	06	120.5 °F
16	120.1 °F	05	120.5 °F
15	120.6 °F	04	120.4 °F
14	120.7 °F	03	119.4 °F
13	120.4 °F	02	115.7 °F
12	120.5 °F	01	110.9 °F

AREA RADIATION MONITOR

ARMGAMMA 0.43 mR/hr

ALARM
SUMMARY

ACK TIME IN TAGNAME
 ✓ 13:27:52 GC2-INST
 ✓ 13:27:47 GC2-TVAL

DESCRIPTION

Instrument Problem - GC2
 GC-2 Zero Value Alarm

STATUS

CFM CFM

VALUE

PROBLEM
ALARM

02/12/1999

MAP

Mixer Pump - Riser 12A

PRINT

13:31:00

DACS v4.00

FLC v3.08

HELP

[PUMP]

PUMPVIEW

PUMPALRM

STRNALM

● CCW ZIMPE144

● CW ZIMPE143

0.0 RPM VR232050

0.0 AMPS VR232040

0.0 VOLTS VR232020

● MOISTURE MIP00001

25.6 UIN/IN WIR12A04

14.9 PSIG ZIMPE142

132.1 °F TIR12A02

ZIMPE112 30.0 DEG

VR232110 0.0 RPM

VR232100 0.0 AMPS

VR232080 0.0 VOLTS

WIR12A01 2.2 UIN/IN

WIR12A03 -11.5 UIN/IN

PCR12A01 0.1 PSID

TIR12A01 129.6 °F

N2 -1.9 PSIG PITNO111

PITNO110 -2.6 PSIG N1

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

✓ 13:27:52 GC2-INST Instrument Problem - GC2

✓ 13:27:47 GC2-TVAL GC-2 Zero Value Alarm

STATUS

CFM

PROBLEM

CFM

ALARM

VALUE UNITS

Page
Back

MIT TEMPERATURE PROFILES

[TEMPRFL] MAP CS MS AS

DACS TEST 03.05 13:20:10 02/12/99

HT
(IN)

MIT 17B

HT
(IN)

MIT 17C

PASSWORD - SECURITY MENU

Node Name

Password to LOGON

Password to LOGOFF

Current Security Level 0

New password

Current Owner

Default

Security Level 0

ALARM DIG GCL-INST GEN-NE

02/12/1999

MAP

MIT Temperature Profiles

PRINT

13:31:10

DACS V4.00

PLC V3.06

HELP

[TEMPREL]

ROLLOVER

MIT17B

MIT17C

HEIGHT,
INCHES

MIT 17B

HEIGHT,
INCHES

MIT 17C

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

✓ 13:27:52 GC2-INSTR Instrument Problem - GC2

✓ 13:27:47 GC2-ZVAL GC-2 Zero Value Alarm

STATUS

CFN

CFN

VALUE

PROBLEM

ALARM

Reviewed: *Boyd G. Gault*

GAS SUMMARY

MAP CS MS AS

DACS TEST U3.05 13:17:33 02/12/99

SUMMARY

ROLLOVER

SY-101 GAS SUMMARY

WHITTAKER 17B H2	0.0000 %
WHITTAKER 12A H2	0.0000 %
WHITTAKER 7A H2	0.0337 %
WHITTAKER 16A H2	0.0000 %

LAST UPDATE

GC-1 H2	2.0 PPM	1317
GC-2 H2	0.0 PPM	0
GC-3 H2	6 PPM	1316
FTIR N2O	7 PPM	1314
FTIR NH3	52 PPM	1314
PHOTO NH3	70 PPM	1318

GMS-2 (VENT HEADER) DIAGNOSTICS

TI10001	30.00	0 F
MT10001	0.00	% RH
FTE50001	0.00	CFM
FTE50002	-1000.0	CFM
FTE50003	0.00	CFM
PITMSY04	14.505	PSIA
PITMSY13	10.469	PSIA
PITMSY16	12.659	PSIA
PDITMSY12	67.216	INMG
FIITMSY17	7.714	INMG
TIITMSY15	72.918	0 F
TIITMSY18	60.470	0 F

PASSWORD - SECURITY MEMO

Node Name
 Password to LOGON
 Password to LOGOFF

Current Security Level 0
 New password
 Current Owner

Default
 Security Level 0

ALARM HALM WIP12A02 GEN-RE

02/12/1999

MAP

Gas Summary

PRINT

13:30:29

DACS V4.00

FLC V3.06

HELP

[GASSUM]

PUMPVIEW

SUMMARY

ROLLOVER

SY-101 GAS SUMMARY

WHITTAKER 7B H₂ 0.039 %
 WHITTAKER 16A H₂ 0.012 %

LAST UPDATE
 DATE TIME

GC-1	H ₂	3.7 PPM	-N/A-	1329
			-N/A-	1326
GC-3	H ₂	6 PPM	-N/A-	1326
FTIR	N ₂ O	7 PPM	-N/A-	1323
FTIR	NH ₃	52 PPM	-N/A-	1323
PHOTO	NH ₃	70 PPM	-N/A-	1328

GMS-2 (VENT HEADER)
DIAGNOSTICS

TT10001	910.22 °F
MT10001	800.20 % RH
PTE50001	0.00 CFM
PTE50002	1000.00 CFM
FTE50003	0.00 CFM
PITMSY04	14.52 PSIA
PITMSY13	10.47 PSIA
PITMSY16	12.64 PSIA
PDTMSY12	66.85 INWG
FITMSY17	7.70 INWG
TITMSY15	73.00 °F
TICMSY18	62.37 °F

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

✓ 13:27:52 GC2-INST Instrument Problem - GC2
 ✓ 13:27:47 GC2-ZVAL GC-2 Zero Value Alarm

STATUS

CFM CFM

VALUE UNITS

PROBLEM
ALARM

Reviewed: *[Signature]*

PAGE
BACK

IMMINENT ROLLOVER [ROLLOVER]

MAP

CS

MS

AS

TEMPERATURE PROFILES 30 SECOND TRENDS

DACS TEST 03.05

13:21:21 02/12/99

MIT RISER 17C

SURFACE LEVEL (IN)

IN TANK PRESSURE (INMG)

TIIR17C01-22 130.140

LIR01A 375.0
LIR01C 375.0

PIR17C01 -6.0
PIR17B04 -5.0

MIT RISER 17B

WHITTAKER HYDROGEN (%)

VENT HEADER FLOW (CFM)

TIIR17B01-22 130.140

NIR17B01 0.000 NLR05A01 0.000
NITJSY06 0.012 NITRSY06 0.042

FTE50001 0.0
FTE50002 -1000

PASSWORD - SECURITY MENU

Node Name

Current Security Level 0

Password to LOGON

New password

Default

Password to LOGOFF

Current Owner

Security Level 0

ALARM DIG GCL-INST GEN-NE

[illegible]

800-235-3333

213

[ROLL OVER]

TERMS

SADOMINATING PUMPS

TEMPERATURE

TEMPERATURE PROFILES

30-SECOND TRENDS

ALARM SUMMARY

ACK	TIME IN	TAGNAME
✓	13:27:52	GC2-INST
✓	13:27:47	GC2-ZVAV

DESCRIPTION
Instrument Problem - GC2
GC-2 Zero Value Alarm

STA	CFM	CFM
-----	-----	-----

VALUE	PROBLEM	ALARM
1	1.1	1.1
2	2.1	2.1
3	3.1	3.1
4	4.1	4.1
5	5.1	5.1
6	6.1	6.1
7	7.1	7.1
8	8.1	8.1
9	9.1	9.1
10	10.1	10.1
11	11.1	11.1
12	12.1	12.1
13	13.1	13.1
14	14.1	14.1
15	15.1	15.1
16	16.1	16.1
17	17.1	17.1
18	18.1	18.1
19	19.1	19.1
20	20.1	20.1
21	21.1	21.1
22	22.1	22.1
23	23.1	23.1
24	24.1	24.1
25	25.1	25.1
26	26.1	26.1
27	27.1	27.1
28	28.1	28.1
29	29.1	29.1
30	30.1	30.1
31	31.1	31.1
32	32.1	32.1
33	33.1	33.1
34	34.1	34.1
35	35.1	35.1
36	36.1	36.1
37	37.1	37.1
38	38.1	38.1
39	39.1	39.1
40	40.1	40.1
41	41.1	41.1
42	42.1	42.1
43	43.1	43.1
44	44.1	44.1
45	45.1	45.1
46	46.1	46.1
47	47.1	47.1
48	48.1	48.1
49	49.1	49.1
50	50.1	50.1
51	51.1	51.1
52	52.1	52.1
53	53.1	53.1
54	54.1	54.1
55	55.1	55.1
56	56.1	56.1
57	57.1	57.1
58	58.1	58.1
59	59.1	59.1
60	60.1	60.1
61	61.1	61.1
62	62.1	62.1
63	63.1	63.1
64	64.1	64.1
65	65.1	65.1
66	66.1	66.1
67	67.1	67.1
68	68.1	68.1
69	69.1	69.1
70	70.1	70.1
71	71.1	71.1
72	72.1	72.1
73	73.1	73.1
74	74.1	74.1
75	75.1	75.1
76	76.1	76.1
77	77.1	77.1
78	78.1	78.1
79	79.1	79.1
80	80.1	80.1
81	81.1	81.1
82	82.1	82.1
83	83.1	83.1
84	84.1	84.1
85	85.1	85.1
86	86.1	86.1
87	87.1	87.1
88	88.1	88.1
89	89.1	89.1
90	90.1	90.1
91	91.1	91.1
92	92.1	92.1
93	93.1	93.1
94	94.1	94.1
95	95.1	95.1
96	96.1	96.1
97	97.1	97.1
98	98.1	98.1
99	99.1	99.1
100	100.1	100.1

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Back

MINIMUM INSTRUMENTATION CHECKLIST #1 [MININ1]

MAP CS MS AS

13:52:35 02/12/99

DACS TEST 03.05

MTMIN2

PIR17B04

-5.0 INHG

PIR17C01

-5.0 INHG

FTE50001

0.00 CFM

FTE50002

-1000.0 CFM

FTE50003

0.00 CFM

GCI-H2

3.7 RPM

GCS-H2

5.0 RPM

GCC-H2

0.0 RPM

NITK506

0.0 % H2

NIR05A01

0.0 % H2

NIT5506

0.0 % H2

NIR17B01

0.0 % H2

FT-AH3C

52 PPM

A40-AH3

70 PPM

WIL1B01

0.2 u"/"

WIL1B02

-4.5 u"/"

WIL1B03

1.2 u"/"

WIL17C01

-55.3 u"/"

WIL17C02

5.5 u"/"

LIR01C

375.00 INCH

LIR01A

375.00 INCH

TIA17B01

112.7 OF

TIA17B02

115.8 OF

03

118.0 OF

04

119.8 OF

05

120.8 OF

06

120.8 OF

07

120.9 OF

08

121.1 OF

09

120.9 OF

10

120.9 OF

11

121.1 OF

12

121.0 OF

PASSWORD - SECURITY MENU

Node Name

Current Security Level 3

Password to LOGON

New password

Default

Password to LOGOFF

Current Owner OPS, ENG, Security Level 0

ALARM LALM NITJSY06 GEN-NE

Page
Back

MINIMUM INSTRUMENTATION CHECKLIST #2 [MININ2]

MAP CS MS AS

13:53:52 02/12/99

DACS TEST V3.05

MININL

TIR17013

121.2 °F
121.3 °F
120.0 °F
120.2 °F
121.0 °F
120.6 °F
119.7 °F
110.7 °F
94.2 °F
88.2 °F
2.3 u"/"

WIR12002
WIR12A03
WIR12A04
MIP00001
TIR12A01
TIR12A02
VAL232050
VAL232040
PCL12A01
PITN0110
PITN0111

-684.0 u"/"
-12.5 u"/"
25.9 u"/"
130.4 °F
131.5 °F
0.0 RPM
0.0 AMPS
0.1 PSID
-2.5 PSIG
-1.8 PSIG

ZIMPE142
ZIMPE112
ALM GAMMA

15.0 PSIG
30.0 DEG
0.3 MR/h

WIR12A01

PASSWORD - SECURITY MENU

Current Security Level 3

New password

Current Owner OPS, ENG, Security Level 0

Default

ALARM LARM NITUSY05 GEN-NE

DACS V4.00

PLC V3.06

HELP

[MINI]

TAGSTAT

ABRTENAB

①

①

FTE50001

0.0 CFM

①

FTE50002

-1000.0 CFM

①

FTE50003

0.0 CFM

①

GC1-H2

4.9 PPM

①

GC3-H2

6.0 PPM

①

NITKSY06

0.04 % H₂

①

NITJSY06

0.01 % H₂

①

FT-NH3C

52 PPM

①

PHO-NH3

70 PPM

①

WIR1BA01

-0.2 UIN/IN

①

WIR1BA02

-4.2 UIN/IN

①

WIR1BA03

1.5 UIN/IN

①

WIR17C01

-55.6 UIN/IN

①

WIR17C02

5.5 UIN/IN

①

①

TIR17B01

112.6 °F

①

TIR17B02

115.4 °F

①

TIR17B03

117.6 °F

①

TIR17B04

119.6 °F

①

TIR17B05

120.2 °F

①

TIR17B06

120.4 °F

①

TIR17B07

120.6 °F

①

TIR17B08

120.5 °F

①

TIR17B09

120.3 °F

①

TIR17B10

120.7 °F

①

TIR17B11

120.5 °F

①

TIR17B12

120.3 °F

①

TIR17B13

120.8 °F

①

TIR17B14

120.4 °F

①

TIR17B15

120.1 °F

①

TIR17B16

119.9 °F

①

TIR17B17

120.3 °F

①

TIR17B18

120.3 °F

①

TIR17B19

119.4 °F

①

TIR17B20

110.0 °F

①

TIR17B21

93.7 °F

①

TIR17B22

87.7 °F

①

WIR12A01

2.8 UIN/IN

①

WIR12A03

-11.9 UIN/IN

①

WIR12A04

25.6 UIN/IN

①

MIF00001

●

①

TIR12A01

130.4 °F

①

TIR12A02

131.9 °F

①

VR232050

0.0 RPM

①

VR232040

0.0 AMPS

①

PCR12A01

0.1 PSID

①

PITNO110

-2.6 PSIG

①

PITNO111

-1.9 PSIG

①

ZIMPE142

15.0 PSIG

①

ZIMPE112

30 DEG

①

ARMGAMMA

0.35 mR/hr

ALARM
SUMMARY

ACK TIME IN TAGNAME

DESCRIPTION

STATUS

VALUE UNITS

✓ 14:08:24 GC2-INST

Instrument Problem - GC2

CFN PROBLEM

✓ 14:08:19 GC2-ZVAL

GC-2 Zero Value Alarm

CFN

ALARM

DACS V4.00

FLC V3.06

HELP

[MIT17B]

ROLLOVER

TEMPREL

MIT17C

MIT 17B

87.7 °F	402"	(22)
109.6 °F	364"	(20)
120.1 °F	316"	(18)
119.8 °F	268"	(16)
120.1 °F	232"	(14)
120.4 °F	208"	(12)
120.8 °F	172"	(10)
120.3 °F	124"	(8)
120.4 °F	100"	(6)
119.7 °F	52"	(4)
115.1 °F	16"	(2)

(21)	392"	93.4 °F
(19)	340"	119.4 °F
(17)	292"	120.1 °F
(15)	244"	120.0 °F
(13)	220"	120.9 °F
(11)	196"	120.3 °F
(9)	148"	120.4 °F
(7)	112"	120.7 °F
(5)	76"	120.0 °F
(3)	28"	117.5 °F
(1)	4"	112.7 °F

3
2
1

NOTE:
Elevations Are With
Respect To The
Bottom Of The Tank

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

✓	13:27:52	GC2-INST	Instrument Problem - GC2
✓	13:27:47	GC2-ZVAL	GC-2 Zero Value Alarm

STATUS

CFN

PROBLEM

VALUE UNITS

CFN

ALARM

Revised: *Aug 1992*

Page Back	PUMP OPERATIONS (4 MINUTE TREND)	[PUMPROPS]	MAP	CS	MS	AS
		DACS TEST 03.05	13:48:23	02/12/99		

OIL TEMP (32-383 °F)

PUMP SPEED (0-1200 RPM)

MOTOR AMPS (0-225 A)

TIME: 01:13:02

01:13:02

01:13:02

HELP SYSTEM				Page 1
:F1:	Display Directories	:F2:	Tab Details	
:F3:	Get Attached Display	:F4:	Alarm Summary / AD8	
:F6:	Recall Last Display	:F7:	System Trend	
:F9:	Tag List	:Enter:	Enter Data Field	
ULTA DATA LOGGING STARTED				ALARM DIG 42R12002 GEN-NE

02/12/1999

MAP

Pump Operations

PRINT

13:39:51

DACS V4.00

PLC V3.06

HELP

[PUMPOPS]

TRENDS

ROLLOVER

PUMP

4-MINUTE TRENDS

ALARM SUMMARY

ACK	TIME IN	TAGNAME	DESCRIPTION	STATUS	VALUE	UNITS
	13:38:37	GC1-INST	Instrument Problem - GC1	CFM	PROBLEM	
	13:38:32	GC1-ZVAL	GC-1 Zero Value Alarm	CFM	ALARM	

Revised: *Arny J. Davis*

13:49:45 02/12/99

DACS TEST U3.05

WEATHER STATION

TEMPERATURE: 43.9 °F
 HUMIDITY: 50.1 %
 PRESSURE: 14.473 PSI
 WIND SPEED: 5.3 MPH
 WIND DIRECTION: 338.3 DEG

POWER
122.5 V

A 11.2 PHA T - TEMP PROBE
 A 3.0 PHB A - CURRENT
 A 3.3 PHC V - VOLTAGE

UPS

71.6 °F

OVER TEMP
 LOW VOLTAGE
 BATTERY
 OUTPUT FAIL
 POWER INPUT

PASSWORD - SECURITY MENU

Node Name Current Security Level 3
 Password to LOGON New password Default
 Password to LOGOFF Current Owner OPS, ENG, Security Level 0

OPS, ENG, LOGGED ON

02/12/1999

MAP

DACS Facilities Management

PRINT

13:40:06

DACS V4.00

PLC V3.06

HELP

[DACS]

WEATHER STATION

Temperature: 44.6 °F

Humidity: 60.3 %

Pressure: 14.5 PSI

Wind Speed: 3.4 MPH

Wind Direction: 281.7 DEG

WIND SOURCE

POWER

121.6 VOLTS

 ϕA 10.7 AMPS ϕB 2.9 AMPS ϕC 3.1 AMPS

UPS

71.3 °F

OVER TEMPERATURE
LOW VOLTAGE
SYNAPSOUTPUT FAIL
POWER INPUT

DACS TRAILER

RACK 14 13 12 11 10 9 8 7 6

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

STATUS

VALUE UNITS

Reviewed: *Day 1/2/2001*

Page
Back

TEMPERATURE - DEG. F

[TBSIC]

MAP CS MS AS

13:57:50 02/12/99

DACS TEST 03.05

TANK BOTTOM & SIDE THERMOCOUPLES

TBSIC01	97.1	TBSIC14	140.0
TBSIC02	96.1	TBSIC15	99.7
TBSIC03	100.1	TBSIC16	97.3
TBSIC04	100.0	TBSIC17	94.5
TBSIC05	106.4	TBSIC18	99.1
TBSIC06	108.5	TBSIC19	98.3
TBSIC07	80.0	TBSIC20	97.0
TBSIC08	109.1	TBSIC21	98.7
TBSIC09	112.1	TBSIC22	100.4
TBSIC10	140.0	TBSIC23	97.2
TBSIC11	112.7	TBSIC24	140.0
TBSIC12	108.2	TBSIC25	98.4
TBSIC13	100.8	TBSIC26	99.4

AG

ALARM LAM NIUS906 GEN-NE

02/12/1999

MAP

Tank Bottom & Side Thermocouples

PRINT

13:40:37

DACS v4.00

PLC v3.06

HELP

[TBSTC]

MSMAIN

TANK BOTTOM & SIDE THERMOCOUPLES

TBSTC01	97.1 °F	TBSTC14	140.0 °F
TBSTC02	96.1 °F	TBSTC15	99.7 °F
TBSTC03	100.1 °F	TBSTC16	97.3 °F
TBSTC04	100.0 °F	TBSTC17	94.5 °F
TBSTC05	106.4 °F	TBSTC18	99.1 °F
TBSTC06	108.5 °F	TBSTC19	98.3 °F
TBSTC07	80.0 °F	TBSTC20	97.0 °F
TBSTC08	109.1 °F	TBSTC21	98.7 °F
TBSTC09	112.1 °F	TBSTC22	100.4 °F
TBSTC10	140.0 °F	TBSTC23	97.2 °F
TBSTC11	112.7 °F	TBSTC24	140.0 °F
TBSTC12	108.2 °F	TBSTC25	98.4 °F
TBSTC13	100.8 °F	TBSTC26	99.4 °F

ALARM
SUMMARY

ACK TIME IN

TAGNAME

DESCRIPTION

STATUS

VALUE UNITS

Reviewed: *Wayne Smith*

Page Back	MANUAL ABORTS				[MANABRT 1				MAP	CS	MS	AS			
													13:12:00	02/12/99	
													DACS TEST	03.05	

LOW HYDROGEN / HIGH AMMONIA					
TAG	DESCRIPTION	Alarm Limit	Abort Limit	Current Value	Units
GC1-H2	GC1 H2 CONCENTRATION	0	N/A	6	PPM
GC3-H2	GC3 H2 CONCENTRATION	0	N/A	8	PPM
FT-NH3C	FTIR NH3 CONCENTRATION		3000	52	PPM
PHO-NH3	STACK NH3 CONCENTRATION		1000	70	PPM

PLC Abort Coil

Reset Abort Coil

PASSWORD - SECURITY MENU			
Node Name		Current Security Level	0
Password to LOGON		New password	Default
Password to LOGOFF		Current Owner	Security Level 0
ALARM HALT WIR12A02			GEN-NE

02/12/1999

MAP

Manual Aborts

PRINT

12:57:45

DACS V4.00

PLC V3.06

HELP

[MANABRT]

CSMAIN

LOW HYDROGEN / HIGH AMMONIA

TAG NAME	DESCRIPTION	ALARM LIMIT	ABORT LIMIT	CURRENT VALUE	UNITS
GC1-H2	GC1 H ₂ Concentration	0		4	PPM
GC3-H2	GC3 H ₂ Concentration	0		6	PPM
FT-NH3C	FTIR NH ₃ Concentration			52	PPM
PHO-NH3	Stack NH ₃ Concentration		3000 1000	69	PPM

 Reset
 PLC Abort Coil

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

STATUS VALUE UNITS

12:55:31 WIR12A02

Instrument Problem - WIR12A02

CFM PROBLEM

✓ 12:30:56 PIR17C01

Instrument Problem - PIR17C01

CFM PROBLEM

Reviewed: *Angela*

Page Back	HYDROGEN/VENT HDR/TANK	L HUTALARM				MAP	CS	MS	AS
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13:06:53 02/12/99
DACS TEST U3.05

TAG	DESCRIPTION	Alarm Limit	Abort Limit	Current Value	Units
NITRSY06	0-10% H2 VENT HDR SHMS 2	0.6	0.0	0.0	%
NITJSY06	0-10% H2 RISER 16A SHMS 1	0.6	0.0	0.0	%
NIR17B01	0-10% H2 RISER 17B GMS	0.6	0.0	0.0	%
NLR05A01	0-10% H2 RISER 12A/5A SHMS 3	0.6	0.0	0.0	%
FTES0001	VENT HEADER FLOW LOW RANGE - < HIGH	675.0	0.0	0.0	CFM
	- < LOW	425.0	0.0		
FTES0002	VENT HEADER FLOW HIGH RANGE - < HIGH	675.0	-1000	-1000	CFM
	- < LOW	425.0	-1000		
PIR17C01	TANK DOME PRESSURE RISER 17C	-1.5	-6.0	-6.0	INWG
PIR17B04	MIT TANK DOME PRESSURE	-1.5	-6.0	-5.0	INWG

PLC Abort Coil

Reset Abort Coil

PASSWORD - SECURITY MENU

Node Name: Current Security Level 0

Password to LOGON: New password

Password to LOGOFF: Current Owner

SECURITY Level 0

ALARM LOGGING STARTED

ALARM LOG CC2-INSI GEN-NE

02/12/1999

MAP

Hydrogen / Vent Header / Tank

PRINT

12:57:14

DACS V4.00

PLC V3.06

HELP

[HVTALARM]

CSMAIN

TAG NAME	DESCRIPTION	ALARM LIMIT	ABORT LIMIT	CURRENT VALUE	UNITS
NITKSY06	0-10% H ₂ Vent Header SHMS 2	0.56	0.75	0.04	%
NITJSY06	0-10% H ₂ Riser 16A SHMS 1	0.56	0.75	0.01	%
NIR17B01	0-10% H ₂ Riser 17B GMS	0.56	0.75	0.01	%
FTE500001	Vent Header Flow Low Range { High	675.0	700.0	0.0	CFM
	Low	425.0	400.0		
FTE500002	Vent Header Flow High Range { High	675.0	700.4	1000.0	CFM
	Low	425.0	400.3		
PIR17B04	MIT Tank Dome Pressure	-1.5	-1.0	-1.7	INWG
		-1.5	-1.0

Reset
PLC Abort Coil

ALARM SUMMARY

ACK	TIME IN	TAGNAME	DESCRIPTION	STATUS	VALUE	UNITS
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✓ 12:30:56 FZR17C01

Instrument Problem - PIR17C01

CTN

PROBLEM

Reviewed: *Aug 1 1999*

Page
Back

STRAIN GAUGES

[STRNALM]

MAP CS MS AS

PUMP

13:09:30 02/12/99

DACS TEST 03.05

TAG	DESCRIPTION	HF Alarm	HF Abort	Alarm Limit	Abort Limit	Current Value	Units
WIR12A01	PUMP SUP. COL. STRN. 1 45 DEG			145.5	194.0	1.2	uIN/IN
WIR12A02	PUMP SUP. COL. STRN. 2 135 DEG			145.5	194.0	-684	uIN/IN
WIR12A03	PUMP SUP. COL. STRN. 3 225 DEG			145.5	194.0	-11.9	uIN/IN
WIR12A04	PUMP SUP. COL. STRN. 4 315 DEG			145.5	194.0	25.2	uIN/IN
WIR1BA01	STRAIN GAUGE RISER 1B AT 530"			317.0	546.0	0.2	uIN/IN
WIR1BA02	STRAIN GAUGE RISER 1B AT 530"			317.0	546.0	-4.2	uIN/IN
WIR1BA03	STRAIN GAUGE RISER 1B AT 530"			317.0	546.0	1.5	uIN/IN
WIR17C01	STRAIN GAUGE RISER 17C - 1			267.0	357.0	-57.0	uIN/IN
WIR17C02	STRAIN GAUGE RISER 17C - 2			267.0	357.0	4.5	uIN/IN

PLC Abort Coil

Reset Abort Coil

PASSWORD - SECURITY MENU

Node Name

Current Security Level 0

Password to LOGON New password

Default

Password to LOGOFF

Current Owner

Security Level 0

HEA72HR DATA LOGGING STARTED

ALARM DIG WZRL2A02

GEN-NE

02/12/1999

MAP

Strain Gauges

PRINT

12:57:53

DACS V4.00

PLC V3.05

HELP

[STRNALM]

CSMAIN

PUMP

TAG NAME	DESCRIPTION	HF ALARM	HF ABORT	ALARM LIMIT	ABORT LIMIT	CURRENT VALUE	UNITS
WIR12A01	Pump Sup. Col. Strain 1 45°			±145.5	±194.0	0.2	uIN/uIN
WIR12A03	Pump Sup. Col. Strain 3 225°			±145.5	±194.0		
WIR12A04	Pump Sup. Col. Strain 4 315°			±145.5	±194.0	-12.2	uIN/uIN
WIR1BA01	Strain Gauge Riser 1B at 530"	●	●	±317.0	±546.0	-0.2	uIN/uIN
WIR1BA02	Strain Gauge Riser 1B at 530"	●	●	±317.0	±546.0	-4.2	uIN/uIN
WIR1BA03	Strain Gauge Riser 1B at 530"	●	●	±317.0	±546.0	1.2	uIN/uIN
WIR17C01	Strain Gauge Riser 17C - 1	●	●	±267.0	±357.0	-56.6	uIN/uIN
WIR17C02	Strain Gauge Riser 17C - 2	●	●	±267.0	±357.0	5.2	uIN/uIN

Reset

PLC Abort Coil

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

STATUS VALUE UNITS

✓

12:30:56 PZR17C01

Instrument Problem - PIR17C01

CFM

PROBLEM

Reviewed: *Long*

Page
Back

TEMPERATURE - DEG. F

[TEMPALM]

MAP CS MS AS

13:10:50 02/12/99

DACS TEST U3.05

RISE 17B

TIR17B22	88.1	TIR17B21	94.2
TIR17B20	110.7	TIR17B19	119.7
TIR17B18	120.6	TIR17B17	121.0
TIR17B16	120.0	TIR17B15	20.6
TIR17B14	121.3	TIR17B13	121.1
TIR17B12	120.8	TIR17B11	121.1
TIR17B10	120.9	TIR17B09	120.9
TIR17B08	121.1	TIR17B07	120.8
TIR17B06	120.9	TIR17B05	120.9
TIR17B04	119.8	TIR17B03	118.1
TIR17B02	115.8	TIR17B01	112.7

Alarm Limit	130.0
Abort Limit	135.0

PLC Abort Coil

Reset Abort Coil

PASSWORD - SECURITY MENU

Node Name
Password to LOGON
Password to LOGOFF

Current Security Level 0
New password
Current Owner

Default

Security Level 0

ALARM HALT MIR2A02

GEN-NE

02/12/1999

MAP

Temperature - °F

PRINT

12:57:28

DACS v4.00

PLC v3.06

HELP

[TEMPALM]

CSMAIN

RISER 17B

TIR17B22	87.7 °F	TIR17B21	93.6 °F
TIR17B20	109.9 °F	TIR17B19	119.5 °F
TIR17B18	120.1 °F	TIR17B17	120.3 °F
TIR17B16	119.8 °F	TIR17B15	120.0 °F
TIR17B14	120.2 °F	TIR17B13	120.9 °F
TIR17B12	120.5 °F	TIR17B11	120.5 °F
TIR17B10	120.7 °F	TIR17B09	120.4 °F
TIR17B08	120.5 °F	TIR17B07	120.7 °F
TIR17B06	120.5 °F	TIR17B05	120.3 °F
TIR17B04	119.7 °F	TIR17B03	117.4 °F
TIR17B02	115.2 °F	TIR17B01	112.6 °F

Alarm
Limit

130.0 °F

Abort
Limit

135.0 °F

Reset

PLC Abort Coil

ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

✓ 12:55:31 WZR12A02

Instrument Problem - WIR12A02

✓ 12:30:56 PZR17C01

Instrument Problem - PIR17C01

STATUS

CFN

OK

CFN

PROBLEM

VALUE

UNITS

Revised: *Aug 1991*

Page Back	PUMP PARAMETERS				MAP	CS	MS	AS
	[PUMPALRM]				13:08:18 02/12/99			
					DACS TEST 03.05			

TAG	DESCRIPTION	Alarm Limit	Abort Limit	Current Value	Units
UR232040	MIXER PUMP MOTOR AMPS	205.0	210.0	0.0	AMP
TIR12A01	MIXER PUMP MOTOR OIL TEMP #1	190.0	225.0	130.0	DEG F
TIR12A02	MIXER PUMP MOTOR OIL TEMP #2	190.0	225.0	131.4	DEG F
MIP00001	MOISTURE IN PUMP MOTOR OIL	N/A	ON	0	ON/OFF
UR232050	MIXER PUMP SPEED	760.0	770.0	0.0	RPM
ZIMPE142	MIXER PUMP COLUMN GAS PRESSURE	9.0	7.0	14.9	PSIG

PLC Abort Coil

PUMP DATA ARCHIVE RATE: SLOW (5 MIN)

Reset Abort Coil

PASSWORD - SECURITY MENU

Node Name

Password to LOGON

Password to LOGOFF

Current Security level 0

New password

Current Owner

Default

Security level 0

ALARM DIG #ZB12A02 GEN-NE

02/12/1999

MAP

Pump Parameters

PRINT

12:57:38

DACS v4.00

PLC v3.06

HELP

[PUMPALRM]

CSMAIN

PUMP

TAG NAME	DESCRIPTION	ALARM LIMIT	ABORT LIMIT	CURRENT VALUE	UNITS
VR232040	Mixer Pump Motor Amps	205.0	210.0	0.0	AMPS
TIR12A01	Mixer Pump Motor Oil Temperature #1	190.0	225.0	130.6	°F
TIR12A02	Mixer Pump Motor Oil Temperature #2	190.0	225.0	131.0	°F
MIP00001	Moisture in Pump Motor Oil	N/A	ON		N/A
VR232050	Mixer Pump Speed	760.0	770.0	0.0	RPM
ZIMPE142	Mixer Pump Column Gas Pressure	9.0	7.0	14.9	PSIG

Reset

PLC Abort Coil
ALARM
SUMMARY

ACK TIME IN TAGNAME DESCRIPTION

STATUS

VALUE UNITS

✓ 12:30:56 PZR17C01 Instrument Problem - FIR17C01

CFW

PROBLEM

ENGINEERING CHANGE NOTICE

1. ECN 648630

Page 1 of 2

Proj.
ECN

S

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedeure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. K.E. Smith, SNF Storage Projects, R3-86, 376-0273	4. USQ Required? ☐ Yes ☒ No	5. Date 02/11/99
	6. Project Title/No./Work Order No. Multi-Canister Overpack, W-442	7. Bldg./Sys./Fac. No. 212H	8. Approval Designator S ^N QD
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-SD-SNF-DR-003, REV 1	10. Related ECN No(s). 645028, 645987, 648627	11. Related PO No. N/A

12a. Modification Work ☐ Yes (fill out Bldg. 12b) ☒ No (NA Bldgs. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date
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13a. Description of Change

13b. Design Baseline Document? ☒ Yes ☐ No

**General Revision to redesign the MCO and MCO Baskets
per Rev 5 of the Performance Specification HNF-S-0426**

14a. Justification (mark one)

Criteria Change ☒Design Improvement ☒Environmental ☐Facility Deactivation ☐As-Found ☐Facilitate Const ☐Const. Error/Omission ☐Design Error/Omission ☐

14b. Justification Details

REVISION 5 OF PERFORMANCE SPECIFICATION HNF-S-0426

Design verification was performed via Independent Review per HNF-PRO-445

15. Distribution (include name, MSIN, and no. of copies)

SEE DISTRIBUTION COVER SHEET

RELEASE STAMP	
DATE:	HANFORD RELEASE
STA: A	
FEB 18 1999	
ID: 2	

ENGINEERING CHANGE NOTICE

Page 2 of 2

1. ECN (use no. from pg. 1)

648630

16. Design Verification Required

☒ Yes

☐ No

17. Cost Impact

ENGINEERING

CONSTRUCTION

Additional

☐

N/A

Additional

☐

N/A

Savings

☐

Savings

☐

18. Schedule Impact (days)

Improvement

☐

N/A

Delay

☐

N/A

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☒	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☒	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Smp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐		☐
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number Revision

MCO TOPICAL REPORT HNF-SD-SNF-SAR005, REV 10 KES 2/18/99
MCO FABRICATION SPECIFICATION
HNF-S-0453, REV 2 ALL

21. Approvals

Signature	Date	Signature	Date
Design Authority L. H. Goldmann <i>L. H. Goldmann</i>	2/12/99	Design Agent J. Tanke <i>J. Tanke</i>	2-11-99
Cog. Eng. K. E. Smith <i>K. E. Smith</i>	2/13/99	PE N/A	2-12-99
Cog. Mgr. J. D. Cloud <i>J. D. Cloud</i>	2/12/99	QA N/A	
QA C. R. Hoover <i>C. R. Hoover</i>	2/12/99	Safety N/A	
Safety B.D. Lorenz <i>B.D. Lorenz</i>	2/12/99	Design N/A	
Environ. N/A		Environ. N/A	
Other None		Other N/A	

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

Charles B. Loftis 2-12-99

ADDITIONAL MCO will comply with section III Div. 1 of ASME code